THE X-CLASS CONSOLES

Left to Right:
BMX III On - Air Console
AMX On - Air Stereo Production Console
ABX Multitrack Production Console

THESE QUALITY DESIGN FEATURES ARE AT THE HEART OF THE X-CLASS CONSOLES:

- ✓ Guaranteed RFI immunity. Our radio consoles are never radio receivers.
- ✓ Wide frequency response with very low noise, distortion, and crosstalk.
- ✓ 30 dB of pre-fader signal headroom to accommodate "hot" inputs. 24 dB of post-fader headroom to accommodate "hot" operators.
- ✓ 15 dB of fader in-hand attenuation at the mix reference line to manage a wide range of signal levels.
- ✓ Three main stereo program output buses, each with distribution amplifiers that can deliver a sustained +28 dBm into multiple loads.
- ✓ Patch/Insert points on all input and output bus modules.
- ✓ All patch points are at the standard interstage reference level to maintain both internal and external processing headroom. All patch point signals are in phase with the consoles input and output signals.
- ✓ Stereo Cue (PFL) and Solo (AFL) with automatic reference level metering and monitoring. Stereo Cue assures that both channels are truly available. Solo lets you preview fader level and pan balance at the touch of a button.
- ✓ Independent A/B input control logic, including separate A and B logic connectors.
- ✓ All control logic is low-noise, click-free, CMOS type, with short-circuit protected command outputs.
- ✓ All microphone inputs have multi-point talkback facilities, including the control room, two studios, and an external site. All talkback paths are simultaneously available without any "busy" restrictions.
- ✓ Jensen Transformer microphone preamplifier circuitry to deliver professional sonic quality with excellent common-mode and transient performance.
- ✓ Application-optimized instrumentation amplifiers to provide symmetrically balanced line inputs with excellent transient performance, high common-mode attenuation and rejection, plus absolute stability in high RFI environments.
- ✓ All switches, relays and circuit board connectors employ gold contacts.
- ✓ Aircraft style monocoque construction, using precision machined quarter-inch thick mainframe endplates.
- ✓ Mix faders contain laser-trimmed conductive plastic elements.
- ✓ Sifam R-Series full-specification VU meters, driven by balanced buffer amplifiers to provide both level calibration trim and the optimum drive impedance to maintain proper meter ballistics.
- ✓ Fully regulated power supplies for audio, logic, and microphone phantom voltages. Modules each have on-board audio supply re-regulation. Redundant power supply systems are available.
- ✓ Standardized audio and logic interconnection system. A wiring harness for one X-Class model is pin-for-pin compatible with the others.
- ✓ Modules can be removed and installed while the console is powered, making service a breeze.

QUALITY IS IN THE DETAILS

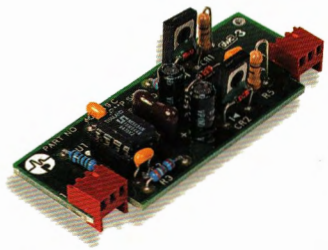
PR&E builds consoles to one level of quality—the finest. That's why our X-Class consoles are used by most of the major-market leaders and large radio networks in the USA.

The X-Class consoles are designed to the most demanding standards, easy to learn and easy to use, they provide:

- ✓ High Reliability
- ✓ Extensive Features
- ✓ Excellent Performance
- ✓ Application Flexibility
- ✓ Extended Life
- ✓ Enhanced Serviceability

Designed as a family, the three X-Class consoles differ only in their quantity of features. The BMX is a versatile on-air console. The AMX combines the BMX features with added stereo production capabilities. The ABX includes the facilities of the other models, adding impressive multitrack production power.

The X-Class design demonstrates an important part of our philosophy: consoles should present operating environments that are as similar as possible. This eliminates the need for operators to memorize the different layouts and functional peculiarities found in unrelated designs. An operator who knows one PR&E console can sit down at another model and get right to work.

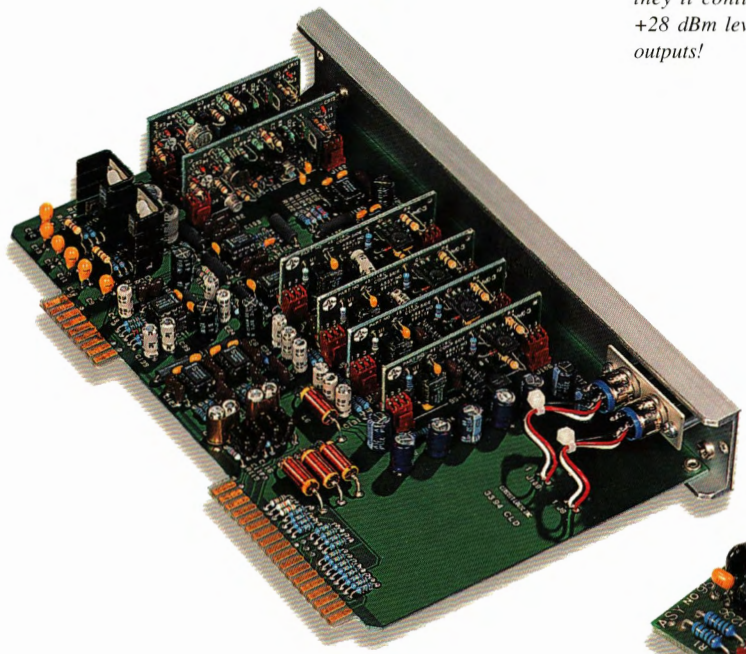


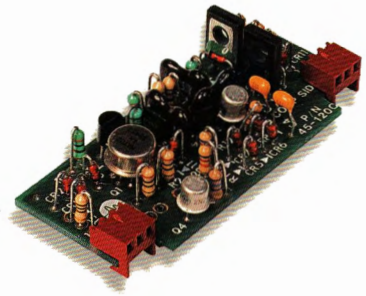
REAL POWER

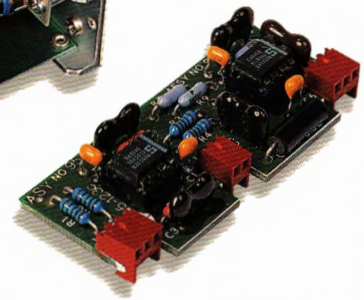
We could have used unbuffered, "barefoot", IC opamp for the console's main outputs, most everybody else does these days, but it wouldn't be in keeping with our philosophy of design margin. Our line amplifiers can deliver +28 dBm continuously into four simultaneous 600 ohm loads. Short one of the four outputs and they'll continue to deliver the same +28 dBm level to the remaining three outputs!

THE STRONGEST LINK

Beyond all the features, bells and whistles, a console is still a mixer and the quality of the bus summing amplifiers often determines the noise, headroom, crosstalk and RF immunity performance of the entire design. The discrete JE-990 type summing amplifier brings very low input noise, wide bandwidth, excellent stability and high output current drive to this demanding task.







NOISE BARRIER

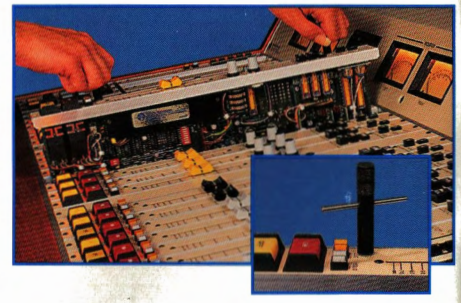
Broadcast consoles are expected to deliver audiophile sound quality in the hostile environment of common-mode noise and RFI. Blocking unwanted noises on balanced inputs is the job of the instrumentation amplifier. Designed to accommodate real-world broadcast environments, our discrete amplifier provides ±200 volts peak common-mode headroom and greater than 60 dB of RF common-mode attenuation.

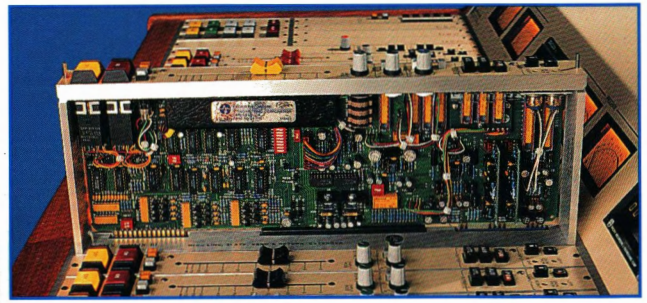
FIRM GROUND

The stainless steel threaded anchor does more than simply hold a module in the mainframe. Module surface panels are part of the consoles' shielding system and should never be drained of static, RF or other electrical noise through the traces of their circuit boards. The mainframe's module anchors are equipped with "teeth" which insure an intimate drain connection to the surface panel.

SERVICE WHILE IT'S HOT

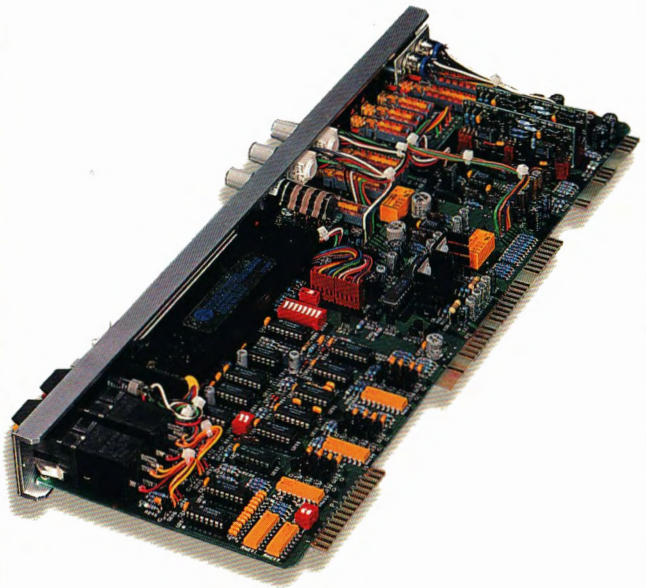
Our consoles are designed to be powered from the date of installation to that day, many years later, when they're moved to a new studio. While we don't expect a module to fail, it's nice to know it can be removed for service or reconfiguration while the console is powered. Note the clever T-handle pull tools, threaded into the panel's stainless steel sockets, which provide a stable and secure method of module removal and reinstallation.





FULL SUPPORT

It's very difficult to service a large module flopping around on an extension cable or waving back and forth on a flimsy extender PC board. This is why our extenders for the input and other major console modules provide more than electrical connection. When a module is installed in one of our extender modules, it is firmly supported with full test and service access to both sides of the circuit board. All audio, power and logic electrical connections are established and the module is fully functional with the console.

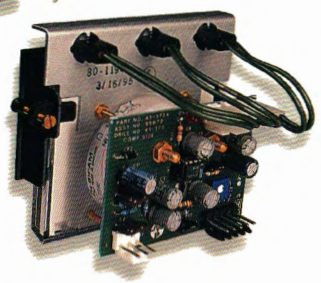


NEAT & SERVICEABLE

Examination of a module yields many insights into a manufacturer's design philosophy. Was the manufacturer concerned more about ease of manufacture for themselves than ease of setup and service for their customers? For example, are heavy use panel controls, such as the channel On and Off button switches, individually removable or are they captured in the panel with a PC wiring board? Are active circuit board components hidden behind front panel components? Does the circuit board layout present a logical arrangement of audio input, interstage and output circuitry, and does it maintain the proper physical separation between audio and logic circuitry? Designing a console is more than simply making the controls on the front panel work, it should also be designed to ease and speed any work behind the front panel.

FINGER FRIENDLY

Industrial grade button switches were chosen to satisfy the operator's need for positive control with actuation feedback. Much more reliable than the commercial-grade units found in other designs, Honeywell channel On and Off button switches deliver long life, muted tactile feedback... and plenty of fingernail clearance.



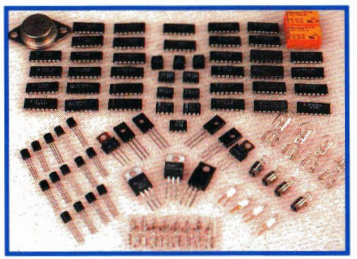
TRUE VIEW

Just because the meter says "VU" on the scale, doesn't make it a VU meter. It only means that the scale is marked in VU increments, not that the meter meets any of the electrical or dynamic characteristics called for in the IEC 268-17 standard.

Our meters are manufactured by Sifam in England and fully meet the standard except for one specification; the meter's input impedance is higher, 11k ohm instead of 7.5k ohm, an improvement in our judgement. We drive each meter with its own balanced buffer amplifier which allows for precise level calibration while insuring ballistic integrity. The amplifier also limits the maximum drive to the meter to prevent overdrive damage. After all, the console can deliver 24 dB above "0" VU.

TOOLS OF THE TRADE

The X-Class consoles come complete with all the specialized tools needed to terminate connectors, extract pins, pull modules, remove button caps and lamps. We've also included spanner wrenches for the Sifam collet knobs.



THE SUM OF THE PARTS

Even though we factory "burn-in" modules and complete consoles, there is the possibility some part may fail in infancy... probably on a Saturday night. We provide a spare parts kit which includes at least one of each type of solid-state device along with a quantity of lamps.

THE BMX CONSOLE - VERSATILITY MADE EASY

The BMX on-air console can handle a talk show with two separate telephone mixes, record a stereo feed for later broadcast, and work with two studios and a remote all at the same time. An intuitive on-air console that is easy to learn and easy to use, with a wide range of sophisticated features.

BMX III FEATURES INCLUDE:

- ✓ Program Output, Audition Output, Utility Output, Control Room Monitor and Auxiliary Meter Switcher modules come standard.
- ✓ Available in 18-, 22-, 26-, 30- and 34-input module capacity mainframes, to accommodate any combination of mic and line input modules.
- ✓ Input mixing section is centered in the mainframe, providing easy reach to console controls and peripheral equipment.
- ✓ Microphone input modules with A and B inputs, high-performance Jensen preamplifier circuitry, phantom power, processing patch point, pan control, stereo cue and solo.
- ✓ Stereo line input modules with A and B inputs, transformerless instrumentation preamplifiers, processing patch points, input mode selector, pan/balance control, stereo cue and solo.
- ✓ Independent remote and module control logic on each input of microphone and line modules.
- ✓ Low-noise, RFI immune, 12-volt CMOS control logic with short-circuit protected outputs.
- ✓ Three stereo program outputs — Program, Audition, and Utility — each with balanced, transformerless, distribution power amplifiers.
- ✓ 30 dB of input, mix, interstage, and patch point headroom.
- ✓ In-phase balanced processing patch points on all input and output modules.
- ✓ Two telephone mix-minus feeds, plus telephone monitor mix.
- ✓ Monaural output, with balanced transformerless distribution power amplifier, selectable from any of the three main stereo outputs.
- ✓ Two optional effect/foldback send mix buses, each with remote control logic.
- ✓ Optional stereo effects/reverb mix return with remote control logic.
- ✓ Control Monitor module with nine external inputs, monitor mode selector, operator headphone Auto-Cue, and buffered outputs for host, co-host, and guest headphone feeds.
- ✓ Stereo cue and solo with automatic reference-level metering and operator headphone monitoring.
- ✓ Studio Monitor module provides monitor, headphone, and talkback facilities for two studios.
- ✓ Multi-way intercommunication system, including producer's position and external feeds.
- ✓ Multi-frequency low-distortion test/reference oscillator.
- ✓ Voice slate system with identification slate tone.
- ✓ Up to five machine remote control panels may be accommodated for control of tape, cassette and DAT decks.
- ✓ Heavy-duty construction, quarter-inch thick, precision machined end plates for precise registration of the mainframe structure.
- ✓ Extra-rigid mainframe motherboard with heavy copper plating for low-impedance power, ground, and signal bus distribution.
- ✓ Extensive use of ground plane printed circuit shielding and RFI decoupling techniques.
- ✓ Superior quality components including Penny & Giles faders, full-spec Sifam VU meters, gold-plated connectors, relays and switches; and highly reliable Honeywell On and Off module command buttons.
- ✓ Heavy-duty power supply, with fully regulated audio, logic and phantom power outputs.
- ✓ On-board audio supply re-regulation on each module.
- ✓ Easy-to-wire connector panel uses individual input, output and logic connectors with functions designated by connector type. Audio and logic interconnection system is compatible with AMX and ABX consoles.
- ✓ Connector kit, tool kit, spare parts kit and comprehensive technical manual are included.

CLOCKS

Two digital clocks are available for the meter panel: crystal-controlled and time code slave. The slave display reads the commonly available ESE-type time code.

REAL VU METERS

Genuine Sifam R32 VU meters — not just "audio level indicators" equipped with VU scales. Meters are connected directly to the console's main output lines indicating the true level on each line — if an output is ever shorted, the operator will know it.

METER SWITCHER

Auxiliary meters are automatically switched to display the stereo level of Cue or Solo whenever either function is selected on any console module. Cue metering provides rapid confirmation of pre-fader levels, while Solo metering eliminates the need to use an output bus for preview or level setting. Five external metering inputs are also available.

STEREO OUTPUT/DISTRIBUTION AMPLIFIERS

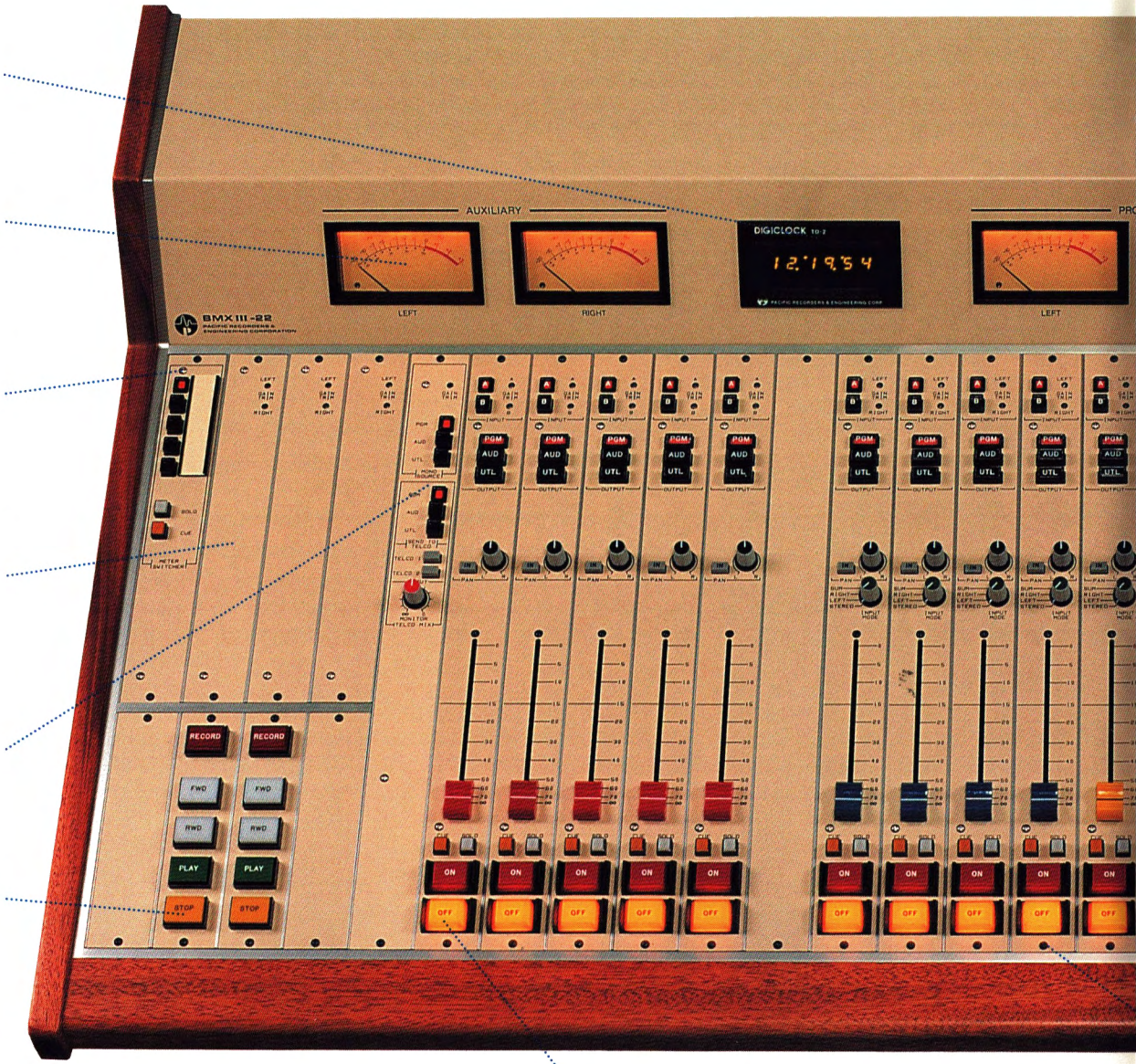
Three identical stereo output amplifier modules contain the stereo summing, patch send & return, and output distribution amplifiers for the Program, Audition and Utility buses. Each module supplies four stereo distribution outputs capable of delivering a sustained +28 dBm level into terminated loads.

TELCO MIX & MONAURAL OUTPUT

The telco mix section creates three unique mix feeds from up to two telephone callers and a user selection of the Program, Audition or Utility bus. While this function has taken on the term "mix-minus", implying the limited performance of subtractive nulling circuitry, this module actually constructs each mix from the component signals, resulting in very low crosstalk, full bandwidth output feeds.

REMOTE CONTROLS

Convenient control of the functions of outboard machines: DAT, open reel, cassette, mini-disc.



MICROPHONE INPUT

Featuring two inputs per module, Jensen preamplifier, phantom power, processing patch point, pan control, stereo cue and solo monitor. Output may be assigned to stereo Program, Audition and Utility buses. Full-featured CMOS remote control logic follows input selection.

TIMER

Digital event timer is controlled by the timer control panel and displays time to one-tenth second resolution in the Stop and Hold modes.

REMOTE LINE SELECTORS

Provides for the choice of up to eight external stereo sources. Typical applications include selecting remote lines for stereo input modules, extending the input selection capability of the monitor system or as source selectors for outboard recording machines.

CONTROL ROOM MONITOR

Monitors Program, Audition, Utility and any of nine externally provided signals. Features include monitor mode selector, operator's headphone Auto-Cue, co-host and guest headphone feeds with programmable talkback. Monitor mute and dim are also remote controllable.

TWO-STUDIO MONITOR

Provides monitor, talent headphone, guest headphone and talkback facilities for up to two studios. The selection of monitor sources include Program, Audition, Utility and up to nine externally provided signals. Monitor and Talkback level controls are included along with a Talk Over Mute switch for each studio.

SLATE / TALKBACK / TEST OSCILLATOR

The console's built-in electret microphone and/or a producer's talkback microphone can talk to two studios plus a remote or external location, such as a screener booth, news room, two-way radio, etc. These positions may also direct slate commentary to recordings. The test oscillator generates 15 low-distortion tones for system testing and level alignment.

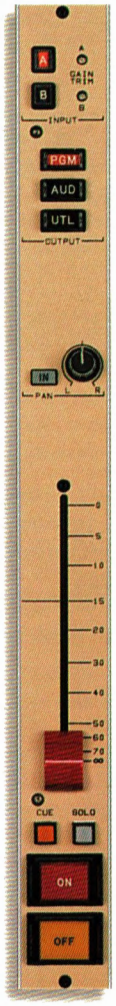
TIMER CONTROL

For manual or automatic control of the digital timer's Start, Stop, Reset and Hold (display freeze) functions. The Auto button allows the console to reset the timer for automatic up timing of selected input events.

STEREO LINE INPUT

Two inputs per module, instrumentation preamplifiers, stereo processing patch points, input mode selector, balance & pan control, stereo cue and solo monitor. Assignable to stereo Program, Audition and Utility buses. Powerful CMOS logic for remote, timer and machine control follows input selection.

MICROPHONE INPUT



The A/B input selector provides two microphone inputs per module. Each input has adjustable gain trim and programmable monitor mute selection for the control room or either of two studios.

The microphone preamplifier is adjustable over the nominal input level range of -60 to -35 dBu, accommodating a wide range of professional microphones. A preamplifier patch output, with balanced return, is available for connection to external processing and special effects equipment. Phantom power for condenser microphones is assignable to each input.

The module's output can be assigned to any combination of the stereo Program, Audition, and Utility buses.

The module may be optionally equipped with an effects/foldback Send fader. This may be assigned to either or both of two send mix buses, and has a Pre/Post-fader source button switch. Stereo send is a user option when assigning the send to either bus results in a monaural mix to that bus. The send is stereo when both bus assignment buttons are engaged.

The Pan control may be inserted with the In button to provide positioning of the microphone signal in the stereo image.

The Penny & Giles 100 millimeter conductive-plastic audio fader has 15 dB in-hand attenuation at mix reference line.

The illuminated Cue button provides cue monitor pre-fader (PFL). The Solo button provides stereo monitor after fader and pan control (AFL).

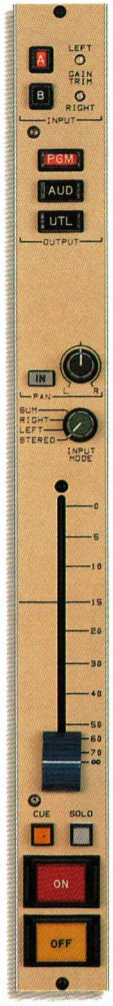
The Honeywell long-life industrial-grade On and Off buttons illuminate to indicate the status of the channel.

Extensive remote control logic for each input, A & B, includes:

- ON with tally
- OFF with tally
- COUGH (momentary mute)
- TALKBACK (to console, studio-1, studio-2 and/or external site)

Programmable control room and studio monitor muting incorporates a 40 msec delay before the mic channel is turned on, permitting "room monitor reverb" to decay off mic. For talent operation, the module's channel On button can be programmed to provide cough muting when held depressed.

LINE INPUT



This module's A and B input switches select either of two stereo inputs. Each input selection has independent module and remote control logic. The module's output may be assigned to any combination of the stereo Program, Audition, and Utility buses.

The stereo instrumentation input preamplifiers accommodate nominal input levels from -12 dBu to +8 dBu. Instrumentation amps were chosen for their true input symmetry plus very high common-mode headroom capability, features which simpler differential amplifier circuits cannot provide. Preamplifier patch outputs, and balanced returns, provide a convenient connection point for external processing equipment.

The Line Input module may be optionally equipped with an effects/foldback Send fader. The fader can be assigned to either or both of two send mix buses, and is equipped with a Pre/Post-fader source button switch. Stereo send is a user option when assigning the send to either bus results in a monaural mix to that bus. The send is stereo when both bus assignment buttons are engaged.

The Pan control, with Insert switch, is provided to balance a stereo signal or to position a mono signal in the stereo image. The Input Mode switch allows source mode selection of stereo, left, right, and a monaural sum of left and right.

The Penny & Giles 100 millimeter conductive-plastic stereo audio fader has 15 dB in-hand attenuation at the mix reference line.

The illuminated Cue button provides stereo cue pre-fader (PFL), while the Solo button provides stereo monitor after fader and pan control (AFL).

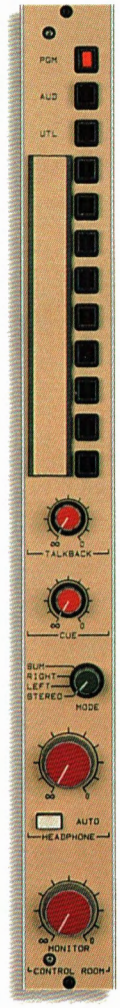
The Honeywell long-life industrial-grade On and Off buttons illuminate to indicate the status of the channel. The Off button can be programmed to illuminate when the connected and selected source indicates it is ready for play.

Remote control logic for each input, A and B, includes:

- ON with tally
- OFF with tally
- CUE with tally
- SOLO with tally
- READY (source)
- AUDIO RESET (channel to Off)
- START pulse
- STOP pulse

Automatic reset/restart of the console event timer is also assignable for each input selection.

CONTROL ROOM MONITOR



This module provides monitoring of Program, Audition, Utility, and any of nine externally provided signals.

The Talkback level control sets the volume of incoming talkback communication to the console's cue system. Talkback automatically dims the cue signal and may also be programmed to dim the monitor speakers.

The Cue level control adjusts the cue (PFL) feed to the cue monitor.

The Monitor Mode switch provides selection of stereo, left, right, and sum source monitoring modes.

The headphone Auto switch selects the mode, monitor or auto-cue, for the console operator's headphone. The auto-cue headphone system senses when any cue button on the console is engaged. It switches the operator's headphone to one of two user-assignable modes, stereo cue or split cue, with summed cue to one channel and summed monitor to the other.

When any Solo button is engaged, the selected signal is automatically routed to the monitor speakers and the console operator's headphones, replacing the signal selected by the monitor selector.

Outputs for the co-host and guest headphones are *not* affected by the automatic cue or solo systems, nor by the monitor mode selection. Talkback to the console may also, at the users option, be inserted into the co-host/guest headphone outputs. Talkback to the console operator's headphone is always provided.

STUDIO MONITOR

Designed for use with separate voice/announce booths or studios, this module provides the monitor, headphone, and talkback facilities for up to two studios. Monitor sources include Program, Audition, Utility, and up to nine externally provided signals.

The module provides five types of outputs to accommodate virtually all booth/studio monitoring styles:

- Variable level monitor output, adjusted by the front panel control, with talkback insertion and dimming control. Usually used with simple voice/announce booth monitoring systems.
- Fixed level monitor output with talkback insertion and fixed dim. Used to equip the booth or studio with its own monitor level control panel.
- Talent headphone output with talkback insertion and fixed dim. Feeds the host and co-host headphone monitor systems.
- Guest headphone output without talkback. Feeds the guest headphones.
- Talkback output. When the booth or studio is equipped with its own monitor selector and control system, provides the talkback audio to that system.

Monitor and Talkback level controls are provided, along with a Talk Over Mute button for each studio. The mute override button enables talkback to a studio even when the monitor speakers are muted by a "live" mic in the studio. This is useful when doing production voice work with talent who prefers not to wear headphones.

SLATE/TALKBACK/TEST OSCILLATOR

This module provides a test oscillator, voice/tone slating system, and talkback communications control for the console operator.

The test oscillator generates 15 low-distortion tones for system testing and level alignment. The tones may be assigned to any combination of the Program, Audition, and Utility mix buses.

Slate commentary can be added to a recording using the console's built-in electret microphone and by a producer's talkback microphone position. A low-frequency, low-distortion slate identification tone (nominally 30 Hz, adjustable) may also be added for ease of slate identification.

The console's and producer's talkback microphones can talk to any two studios *plus* a remote or external location, such as a screener booth, newsroom, or two-way radio. The frequency response of the talkback microphone preamplifiers has been carefully tailored to provide optimum speech communication.

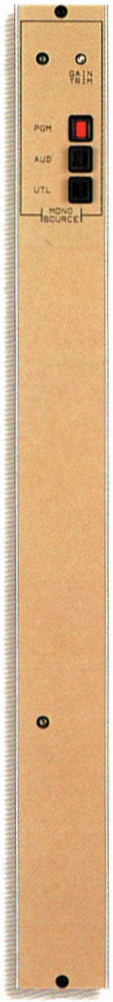
STEREO OUTPUT AMPLIFIER

This module contains the stereo summing, patch send and return, and output distribution amplifiers for each console stereo bus output. The BMX has three of these modules, one each for the Program, Audition, and Utility buses.

Each module supplies four stereo distribution outputs and each of these outputs can deliver a sustained +28 dBm output level to a terminated load.

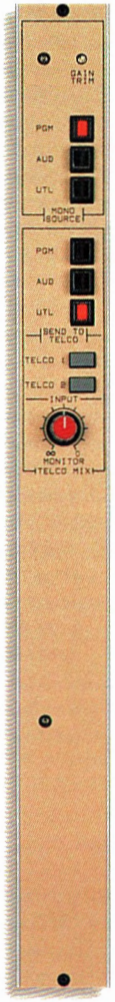
Patch send and return points are available for the connection of external processing equipment or patch field. The output distribution line amplifiers are active balanced push-pull designs intended for professional balanced termination techniques.

MONAURAL OUTPUT



This module provides a selection of the three main stereo output buses — Program, Audition, and Utility — to derive a monaural output. A patch send and return provides for the connection of external processing equipment or patch field. The output distribution amplifier is an active balanced design with two outputs.

MONAURAL OUTPUT/TELCO MIX



This module combines the features of the Monaural Output module with facilities for deriving the mix-minus feeds for telephone hybrids.

The Telco Mix section creates three unique mixes of the signals from two telephone callers and a selection of the Program, Audition, and Utility buses. It is also used to create custom mix-minus foldback mixes, such as for remote broadcasts.

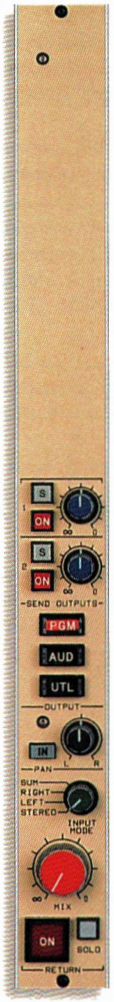
Telephone calls to be broadcast are controlled by the console input modules connected to each of the external telephone hybrid systems. The Telco Mix module receives the audio from these modules and sums them into a Monitor Mix output. This is useful when talent or guests prefer to use a small speaker system instead of headphones to hear callers.

The Telco Mix module selects which output bus will be the base mix to be fed back to *all* callers. The module next creates a *unique* mix for each of up to two callers, containing the base mix plus *only* the *other* caller. This function is often termed "mix-minus", implying the limited performance of subtractive nulling circuitry. However, the Telco Mix module actually *constructs* each output from the individual component signals, resulting in very low-crosstalk, full bandwidth output signals.

MONAURAL OUTPUT/TELCO MIX/SEND & RETURN

This module combines the Monaural Output/Telco Mix module with the facilities of the Send & Return module. The combination module supports use of the optional send buses and provides return mix and assign circuitry for effects such as reverb. The Send & Return portion operates identically to the dedicated Send & Return module.

SEND & RETURN



This optional module contains the two Send bus mixing and output amplifiers, and the stereo reverb/effects Return input circuitry.

The Send section has a set of bus summing and output amplifiers for each of the two effects/foldback send circuits. Each send output has a master level control plus On and Solo buttons. The send On/Off function can be remotely controlled, useful in applications such as providing voice talent with an echo/effect send button.

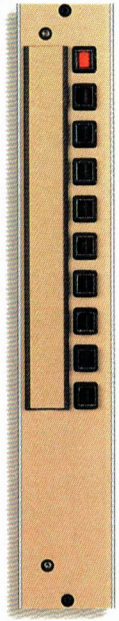
The Return section has a conductive plastic mix fader, Input Mode selector, Pan/Balance control, On/Off and Solo buttons, and assignment buttons for the Program, Audition, and Utility buses. Logic control circuitry is provided for remote on/off control of the return input, complete with tally lamp drive.

METER SWITCHER

This module drives the console's Auxiliary meters, and can select from five externally connected signals. On consoles which are equipped with the optional effects/foldback send buses, the fifth meter selector button will monitor Send outputs 1 and 2.

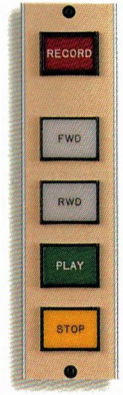
The Auxiliary meters are automatically switched to display the reference level of Cue or Solo when either function is selected on any console module. Cue metering provides rapid confirmation of module pre-fader input levels. Solo metering completely eliminates the need to use a main output bus for preview and mix level setting. The Cue and Solo lamps illuminate to remind the operator when either function is engaged anywhere on the console.

REMOTE LINE SELECTOR

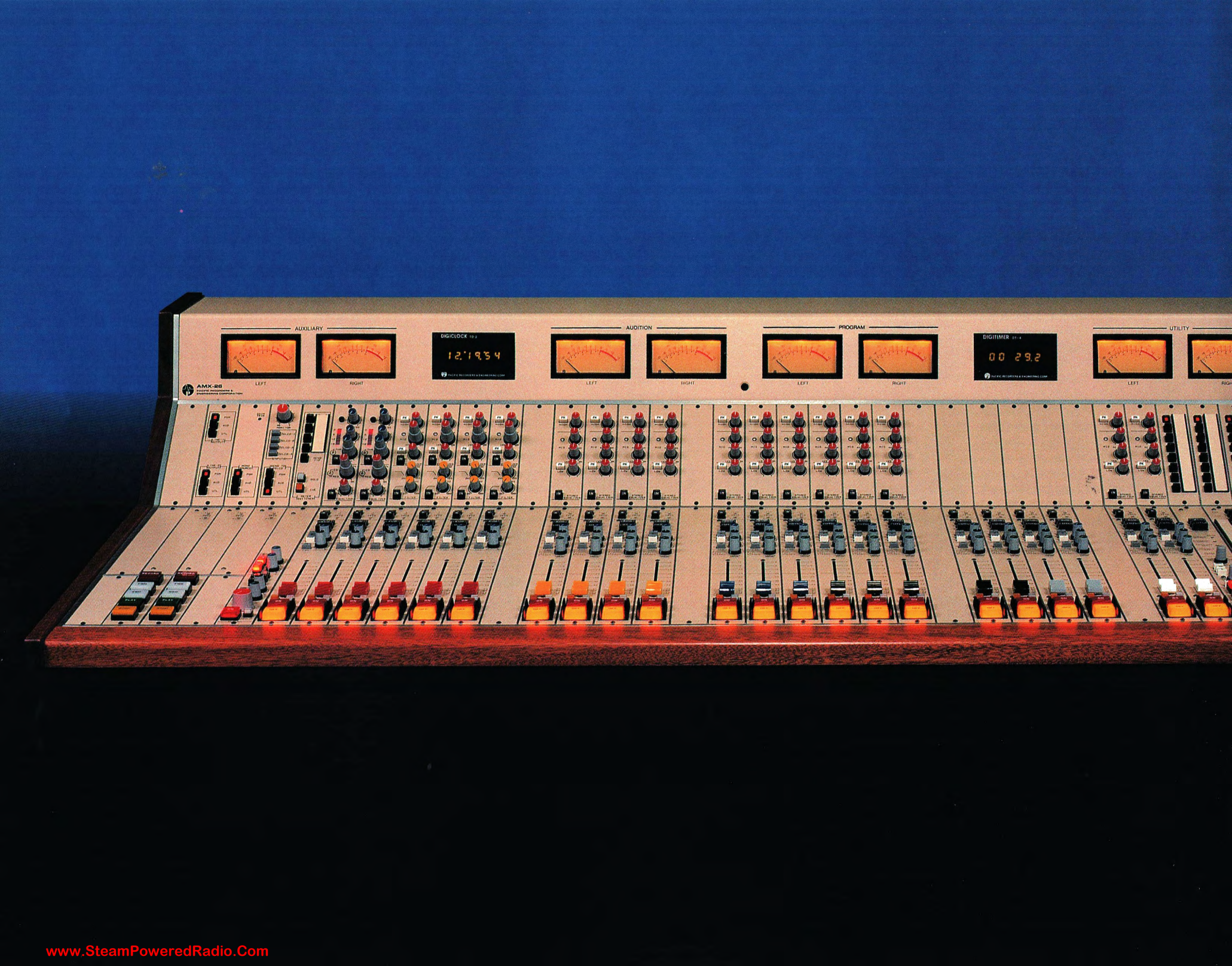


This module provides a selection of ten stereo signals switched to one output. Up to two remote line selector modules, with parallel inputs, may be installed in the console. The inputs and outputs for these modules are all available on the console's connector panel for ease of assignment. Typical applications include use as a remote line pre-selector for console input modules and as a source selector for recording equipment.

REMOTE CONTROL PANELS



Several machine remote control panels are available for convenient control of outboard source equipment. Some of the more popular standard panels include open reel, cassette, cart and DAT controls.



THE AMX CONSOLE - STEREO PRODUCTION POWER

The AMX is ideal for both on-air and stereo production. It retains all the quality BMX on-air facilities, and adds a bay for processing modules and other features.

AMX FEATURES INCLUDE:

- ✓ Program Output, Audition Output, Utility Output, Effects Send & Return, Control Room Monitor, and Auxiliary Meter Switcher modules are standard equipment.
- ✓ Available in 18-, 22-, 26-, 30- and 34-input module capacity mainframes, to accommodate any combination of mic and line input modules, plus monaural and stereo equalizer and voice processing modules.
- ✓ Input mixing section is centered in the mainframe to provide easy reach to console controls and peripheral equipment.
- ✓ Microphone input modules with A and B inputs, high-performance Jensen Transformer preamplifier, phantom power, processing patch point, pan control, effects send and assignment controls, stereo cue and solo.
- ✓ Stereo line input modules with A and B inputs, transformerless instrumentation preamplifiers, stereo processing patch points, input mode selector, effects send and assignment controls, pan/balance control, stereo cue and solo.
- ✓ Independent CMOS remote phone and line modules.
- ✓ Low-noise, RFI immune, 12-volt CMOS control logic with short-circuit protected outputs.
- ✓ Three stereo program outputs — Program, Audition and Utility — each with balanced, transformerless, distribution power amplifiers.
- ✓ 30 dB of input, mix, interstage, and patch point headroom.
- ✓ In-phase, balanced processing patch points on all input and output modules.
- ✓ Four telephone mix-minus feeds, plus telephone monitor mix.
- ✓ Monaural output, with balanced transformerless distribution power amplifier, selectable from any of the three main stereo outputs.
- ✓ Two effect/foldback send mix buses, each with remote control logic.
- ✓ Stereo effects/reverb mix return with remote control logic.
- ✓ Control Monitor module with nine external inputs, monitor mode selector, operator headphone Auto-Cue and buffered outputs for host, co-host, and guest headphone feeds.
- ✓ Stereo cue and solo with automatic reference-level metering and headphone control logic on each input of microphone and line modules.
- ✓ Studio Monitor module provide monitor, headphone and talkback facilities for two studios.
- ✓ Multi-way intercommunication system, including producer position and external feeds.
- ✓ Multi-frequency low-distortion test/reference oscillator.
- ✓ Voice slate system with identification slate tone.
- ✓ Up to five machine remote control panels may be accommodated for control of tape, cassette and DAT decks.
- ✓ Heavy-duty construction, quarter-inch thick, precision machined end plates for precise registration of the mainframe structure.
- ✓ Extra-rigid mainframe motherboard with heavy copper plating for low-impedance power, ground, and signal bus distribution.
- ✓ Extensive use of ground plane printed circuit shielding and RFI decoupling techniques.
- ✓ Superior quality components, including: Penny & Giles faders; full-spec Sifam VU meters; gold-plated connectors, relays and switches; and highly reliable Honeywell On and Off module command buttons.
- ✓ Heavy-duty power supply, with fully regulated audio, logic and phantom power outputs.
- ✓ On-board audio supply re-regulation on each module.
- ✓ Easy-to-wire connector panel utilizes individual input, output and logic connectors with functions designated by connector type. Audio and logic interconnection system is compatible with BMX and ABX consoles.
- ✓ Connector kit, tool kit, spare parts kit and comprehensive technical manual are included.

CLOCKS

Two digital clocks are available for the meter panel: crystal-controlled and time code slave. The slave display reads the commonly available ESE-type time code.

REAL VU METERS

Genuine Sifam R32 VU meters — not just "audio level indicators" equipped with VU scales. Meters bridge the main output lines to indicate the true level on each line — if an output is ever shorted, the operator will know it.

METER SWITCHER

Auxiliary meters are automatically switched to display the stereo level of Cue or Solo whenever either function is selected on any console module. Cue metering provides rapid confirmation of pre-fader levels, while Solo metering eliminates the need to use an output bus for preview or level setting. In addition to metering the two Send mixes, four external inputs are also selectable.

TELCO MIX

The telco mix section creates five unique mix feeds from up to four telephone callers and a user selection of the Program, Audition or Utility bus. While this function has taken on the term "mix-minus", implying the limited performance of subtractive nulling circuitry, this module actually constructs each mix from the component signals, resulting in very low crosstalk, full bandwidth output feeds.

MONAURAL OUTPUT

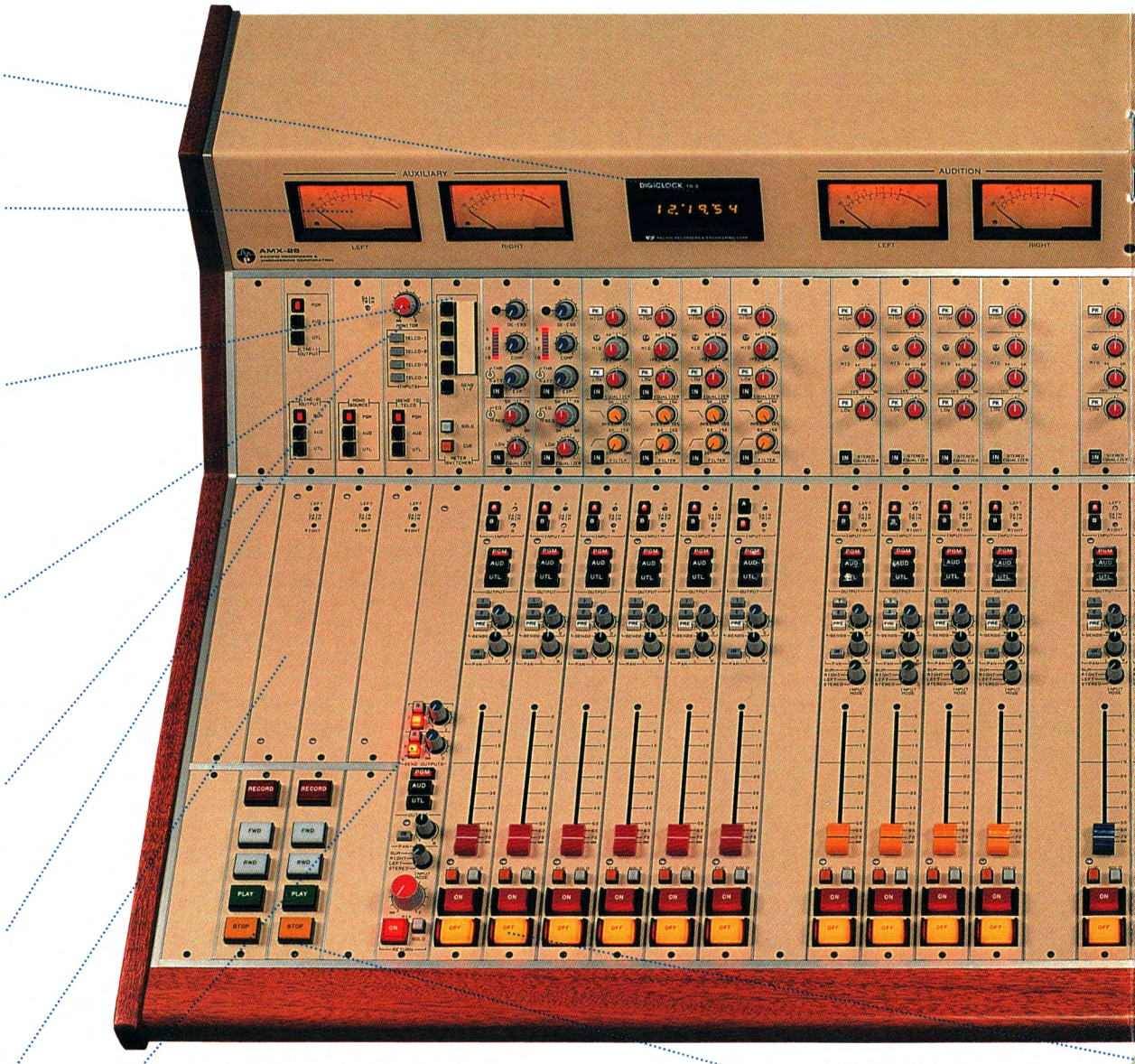
Module provides a selection of the three main stereo output buses, Program, Audition and Utility to derive a monaural output. A patch send and return is provided for the connection of external processing equipment. The output line amplifier is an active balanced design with two distribution outputs.

LINE OUTPUT SELECTOR

Selects a dedicated output of the Program, Audition and Utility buses for each of two separate stereo output lines for such applications as feeding main and back-up transmission lines or as an input selector for recorders.

STEREO OUTPUT / DISTRIBUTION AMPLIFIERS

Three identical stereo output amplifier modules contain the stereo summing, patch send & return, and output distribution amplifiers for the Program, Audition and Utility buses. Each module supplies four stereo distribution outputs capable of delivering a sustained +28 dBm level into terminated loads.

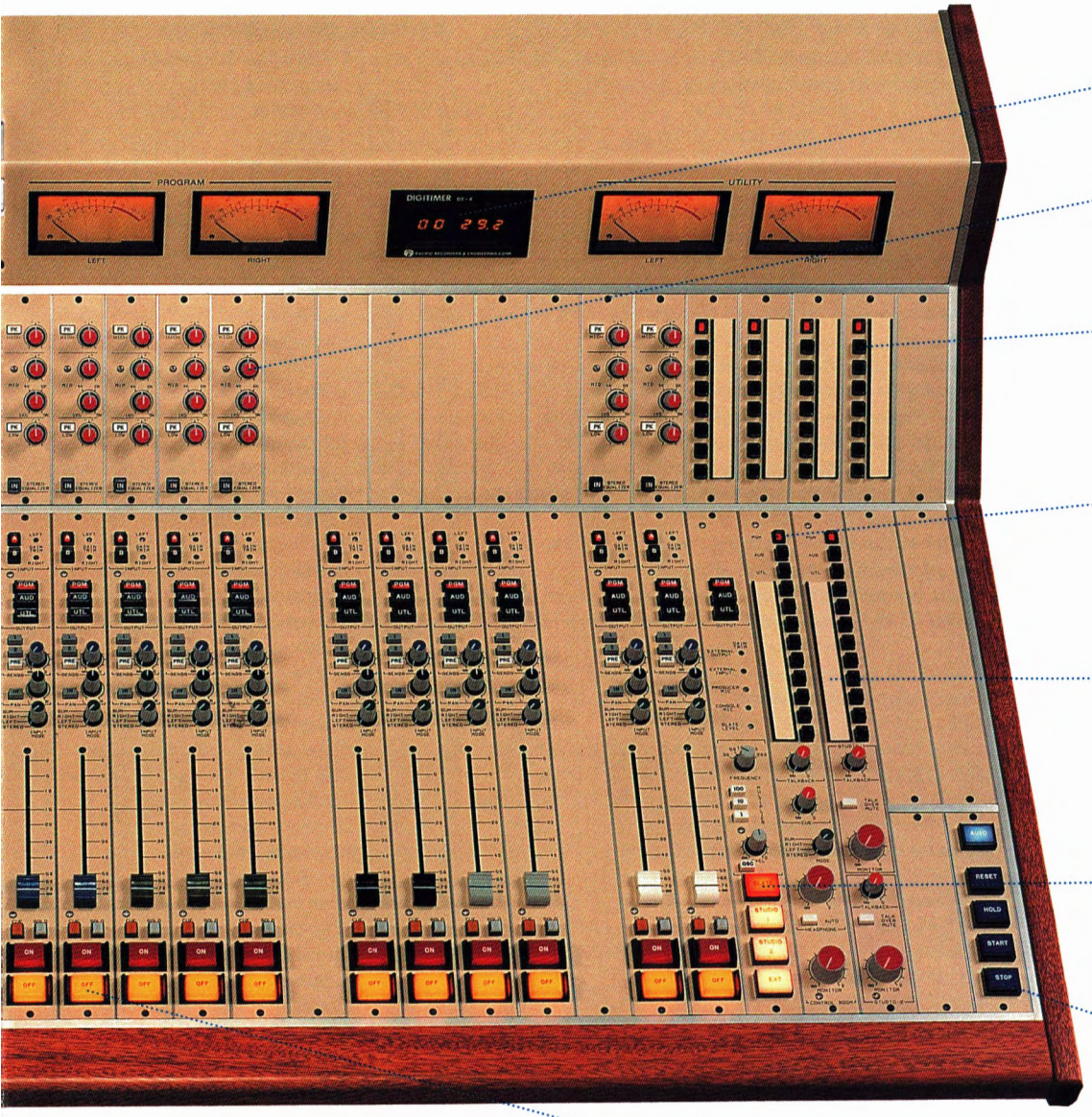


SEND OUTPUT & RETURN MIX

Each of two send outputs is equipped with a master level control plus on/off and solo monitoring buttons. The on/off function may be remote controlled; a typical application would be an echo send button. The stereo return mix is equipped with a conductive plastic-fader, input mode selector, pan/balance control, on/off and solo buttons plus assignment buttons for the Program, Audition and Utility buses. Logic circuitry is provided for the remote control of the return input.

REMOTE CONTROLS

Convenient control of the functions of outboard machines: DAT, open reel, cassette, mini-disc.



TIMER

Digital event timer is controlled by the timer control panel and displays time to one-tenth second resolution in the Stop and Hold modes.

INPUT PROCESSING

Voice processor, monaural and stereo equalizer modules are installed as required; immediately above their respective inputs.

REMOTE LINE SELECTORS

Provides for the choice of up to eight external stereo sources. Typical applications: selecting remote lines for stereo input modules, extending the input selection capability of the monitor system or as source selectors for outboard recording machines.

CONTROL ROOM MONITOR

Monitors Program, Audition, Utility and any of nine externally provided signals. Features include monitor mode selector, operator's headphone Auto-Cue, co-host and guest headphone feeds with programmable talkback. Monitor mute and dim are remote controllable.

TWO-STUDIO MONITOR

Provides monitor, talent headphone, guest headphone and talkback facilities for up to two studios. The selection of monitor sources include Program, Audition, Utility and up to nine externally provided signals. Monitor and Talkback level controls are included along with a Talk Over Mute button for each studio.

SLATE / TALKBACK / TEST OSCILLATOR

The console's built-in electret microphone and/or a connected producer's talkback microphone can talk to two studios plus a remote or external location, such as a screener booth, news room, two-way radio, etc. These positions may also direct slate commentary to recordings. The test oscillator generates 15 low-distortion tones for system testing and level alignment.

TIMER CONTROL

For manual or automatic control of the digital timer's Start, Stop, Reset and Hold (display freeze) functions. The Auto button allows the console to reset the timer for automatic up timing of selected input events.

MICROPHONE INPUT

Featuring two inputs per module, Jensen preamp, phantom power, processing patch point, pan control stereo cue and solo monitor. Output may be assigned to stereo Program, Audition, Utility and two Send mix buses. Full-featured CMOS remote control logic follows input selection.

STEREO LINE INPUT

Two inputs per module, transformerless instrumentation preamplifiers, stereo processing patch points, input mode selector, balance & pan control, stereo cue and solo monitor. Assignable to stereo Program, Audition, Utility and two Send mix buses. Powerful CMOS logic for remote, timer and machine control follows input selection.

MICROPHONE INPUT

The A/B input selector provides two microphone inputs per module. Each input has adjustable gain trim and programmable monitor mute selection for the control room or either of two studios.

The microphone preamplifier, adjustable over the nominal input level range of -60 to -35 dBu, accommodates a wide range of professional microphones. A preamplifier patch output, with balanced return, is available for connection to external processing and special effects equipment. Phantom power for condenser microphones is assignable to each input.

The module's output may be assigned to any combination of the stereo Program, Audition, and Utility buses.

The effects/foldback Send fader can be assigned to either or both of two send mix buses and has a Pre/Post-fader source button switch. Stereo send is a user option when assigning the send to either bus results in a monaural mix to that bus. The send is stereo when both bus assignment buttons are engaged.

The Pan control may be inserted with the In button to provide positioning of the microphone signal in the stereo image.

The Penny & Giles 100 millimeter conductive-plastic audio fader has 15 dB in-hand attenuation at mix reference line.

The illuminated Cue button provides cue monitor pre-fader (PFL). The Solo button provides stereo monitor after fader and pan control (AFL).

The Honeywell long-life industrial-grade On and Off buttons illuminate to indicate the status of the channel.

Extensive remote control logic for each input, A and B, includes:

- ON with tally
- OFF with tally
- COUGH (momentary mute)
- TALKBACK (to console, studio-1, studio-2 and/or external site)

Programmable control room and studio monitor muting incorporates a 40 msec delay before the mic channel is turned on, permitting "room monitor reverb" to decay off mic. For talent operation, the module's channel On button can be programmed to provide cough muting when held depressed.

LINE INPUT

The A/B input switches select either of two stereo inputs with independent module and remote control logic for each input selection.

The stereo instrumentation input preamplifiers accommodate nominal input levels from -12 dBu to +8 dBu. Instrumentation amps were chosen for their true input symmetry plus very high common-mode headroom capability, features which simpler differential amplifier circuits cannot provide. Preamplifier patch outputs, and balanced returns, provide a convenient connection point for external processing equipment.

The module's output may be assigned to any combination of the stereo Program, Audition, and Utility buses.

The effects/foldback Send fader can be assigned to either or both of two send mix buses and has a Pre/Post-fader source button switch. Stereo send is a user option when assigning the send to either bus results in a monaural mix to that bus. The send is stereo when both bus assignment buttons are engaged.

The Pan control, with Insert switch, can balance a stereo signal or position a mono signal in the stereo image.

The Input Mode switch allows source mode selection of stereo, left, right, and a monaural sum of left and right.

The Penny & Giles 100 millimeter conductive-plastic stereo audio fader has 15 dB in-hand attenuation at the mix reference line.

The illuminated Cue button provides stereo cue pre-fader (PFL). The Solo button provides stereo monitor after fader and pan control (AFL).

The Honeywell long-life industrial-grade On and Off buttons illuminate to indicate the status of the channel. The Off button may also be programmed to be illuminated when the connected and selected source indicates it is ready for play.

Remote control logic for each input, A and B, includes:

- ON with tally
- OFF with tally
- CUE with tally
- SOLO with tally
- READY (source)
- AUDIO RESET (channel to Off)
- START pulse
- STOP pulse

Automatic Reset/Restart of the console event timer is assignable for each input selection.

CONTROL ROOM MONITOR

This module provides monitoring of Program, Audition, Utility, and any of nine externally provided signals. The Talkback level control sets the volume of incoming talkback communication to the console's cue system. Talkback automatically dims the cue signal and may also be programmed to dim the monitor speakers.

The Cue level control adjusts the cue (PFL) feed to the cue monitor.

The Monitor Mode switch provides selection of stereo, left, right, and sum source monitoring modes.

The headphone Auto switch selects the mode, monitor or auto-cue, for the console operator's headphone. The auto-cue headphone system senses when any cue button on the console is engaged. It switches the operator's headphone to one of two user-assignable modes, stereo cue or split cue, with summed cue to one channel and summed monitor to the other.

When any Solo button is engaged, the selected signal is automatically routed to the monitor speakers and the console operator's headphones, replacing the signal selected by the monitor selector.

Outputs for the co-host and guest headphones are not affected by the automatic cue or solo systems, nor by the monitor mode selection. Talkback to the console may also, at the users option, be inserted into the co-host/guest headphone outputs. Talkback to the console operator's headphone is always provided.

STUDIO MONITOR

Designed for use with separate voice/announce booths or studios, this module provides the monitor, headphone, and talkback facilities for up to two studios. Monitor sources include Program, Audition, Utility, and up to nine externally provided signals.

This module provides five types of outputs to accommodate virtually all booth/studio monitoring styles:

- Variable level monitor output, adjusted by the front panel control, with talkback insertion and dimming control. Usually used with simple voice/announce booth monitoring systems.
- Fixed level monitor output with talkback insertion and fixed dim. Used to equip the booth or studio with its own monitor level control panel.
- Talent headphone output with talkback insertion and fixed dim. Used to feed the host and co-host headphone monitor systems.
- Guest headphone output without talkback. Used to feed the guest headphones.
- Talkback output. When the booth or studio is equipped with its own monitor selector and control system, provides the talkback audio to that system.

Monitor and Talkback level controls are provided, along with a Talk Over Mute button for each studio. The mute override button enables talkback to a studio even when the monitor speakers are muted by a "live" mic in the studio. This is useful when doing production voice work with talent who prefers not to wear headphones.

SLATE/TALKBACK/TEST OSCILLATOR

This module provides a test oscillator, voice/tone slating system, and talkback communications control for the console operator.

The test oscillator generates 15 low-distortion tones for system testing and level alignment. The tones may be assigned to any combination of the Program, Audition, and Utility mix buses.

Slate commentary can be added to a recording using the console's built-in electret microphone or by a producer's talkback microphone position. A low-frequency, low-distortion slate identification tone (nominally 30 Hz, adjustable) may also be added for ease of slate identification.

The console's and producer's talkback microphones can talk to any two studios plus a remote or external location, such as a screener booth, newsroom, or two-way radio. The frequency response of the talkback microphone preamplifiers has been carefully tailored to provide optimum speech communication.

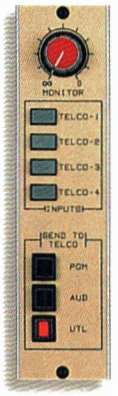
SEND & RETURN

This module contains the two effects/foldback Send mixing and output amplifiers, and the stereo reverb/effects Return input circuitry.

The Send section has a set of bus summing and output amplifiers for each of the two effects/foldback send circuits. Each send output has a master level control plus On and Solo buttons. The send On/Off function can be remotely controlled, useful in applications such as providing voice talent with an echo/effect send button.

The Return section has a conductive plastic mix fader, Input Mode selector, Pan/balance control, On/Off and Solo buttons, and assignment buttons for the Program, Audition, and Utility buses. Logic control circuitry is provided for remote on/off control of the return input, complete with tally lamp drive.

TELCO MIX



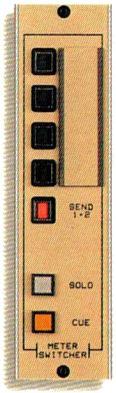
This module constructs five unique mixed outputs from the signals of up to four telephone callers and a selection of one of the output buses (Program, Audition, or Utility).

Telephone calls to be broadcast are controlled by the console input modules connected to each of the external telephone hybrid systems. The Telco Mix module receives the audio from these modules and sums them into a Monitor Mix output. This is useful when talent or guests prefer to use a small speaker system instead of headphones to hear callers.

The Telco Mix module selects which output bus will be the base mix of inputs to be fed back to *all* callers. The module next creates a *unique* mix for each of up to four callers, containing the base mix plus *only* the *other* callers. This function is often termed "mix-minus", implying the limited performance of subtractive nulling circuitry. However, the Telco Mix module actually *constructs* each output from the individual component signals, resulting in very low-crosstalk, full bandwidth output signals.

The Telco Mix module can also be used to create one or more custom mix-minus foldback mixes, such as for remote broadcasts.

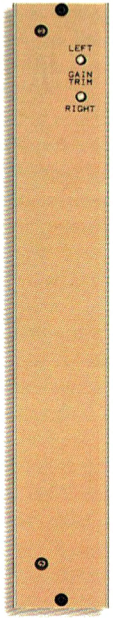
METER SWITCHER



This module drives the console's Auxiliary meters, and can select from four externally connected signals and Send buses 1 and 2.

The Auxiliary meters are automatically switched to display the reference level of Cue or Solo when either function is selected on any console module. Cue metering provides rapid confirmation of module pre-fader input levels. Solo metering completely eliminates the need to use a main output bus for preview and mix level setting. The Cue and Solo lamps illuminate to remind the operator when either function is engaged anywhere on the console.

STEREO OUTPUT AMPLIFIER

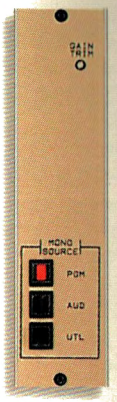


This module has the stereo summing, patch send and return, and output distribution amplifiers for each console stereo line output. The console has three of these modules, one each for the Program, Audition, and Utility buses.

Each module supplies four stereo distribution outputs and each of these outputs can deliver a sustained +28 dBm output level to a terminated load.

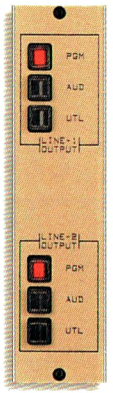
Patch send and return points are available for the connection of external processing equipment or patch field. The output distribution line amplifiers are active balanced push-pull designs intended for professional balanced termination techniques.

MONAURAL OUTPUT



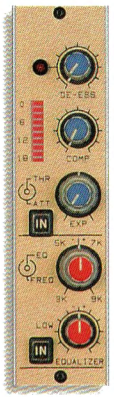
This module provides a selection of the three main stereo output buses — Program, Audition, and Utility — to derive a monaural output. A patch send and return is provided for the connection of external processing equipment or patch field. The output distribution amplifier is an active balanced design with two outputs.

LINE OUTPUT SELECTOR



This module selects a dedicated distribution amplifier output of the Program, Audition, and Utility buses for each of two separate stereo output lines. Typical applications include main and backup transmission lines, or as an input selector for recording devices.

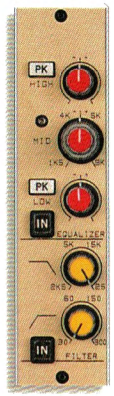
VOICE PROCESSOR



The Voice Processor combines four functions: equalizer, noise gate/expander, compressor, and de-esser. Each is specifically optimized to provide tonal and level control for voice information.

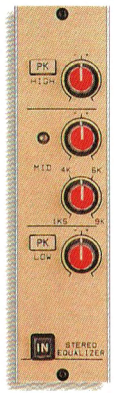
The processor has two major sections. The first is a switch-insertable equalizer which covers the frequency range normally required for speech correction and enhancement. The second section contains the expander (gate), compressor, and de-esser system. The expander threshold and attenuation controls achieve noise-reduction during pauses in speech. The compressor provides "smoothing and density" of the signal. The de-esser senses and operates only on the treble region, providing excellent control over excessive sibilance without undesirable broadband side effects.

MONAURAL EQUALIZER



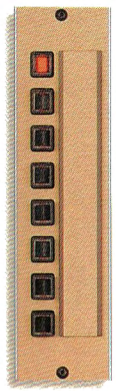
This unit combines a three-band equalizer and tunable high and low pass filters into one compact module. The equalizer section can be switched in and out independently from the filter section. The bass and treble equalization sections are independently switchable from peaking to shelving modes. An internal switch allows the bass equalization section to remain in the shelving mode during cut, providing maximum control over low frequency "rumble". The mid-range equalization is tunable over a considerable mid-band frequency range. All three equalization sections have reciprocal boost and cut curves. Third-order high and low pass filters have variable frequency controls covering a wide range.

STEREO EQUALIZER



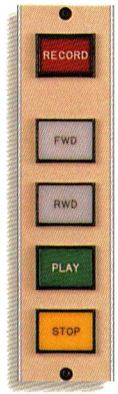
This equalizer has two separate, but stereo coupled, three-band equalizers. The high and low frequency equalization is switchable between peaking or shelving mode. The mid-range equalizer has the same broad range of control provided in the monaural version.

REMOTE LINE SELECTOR

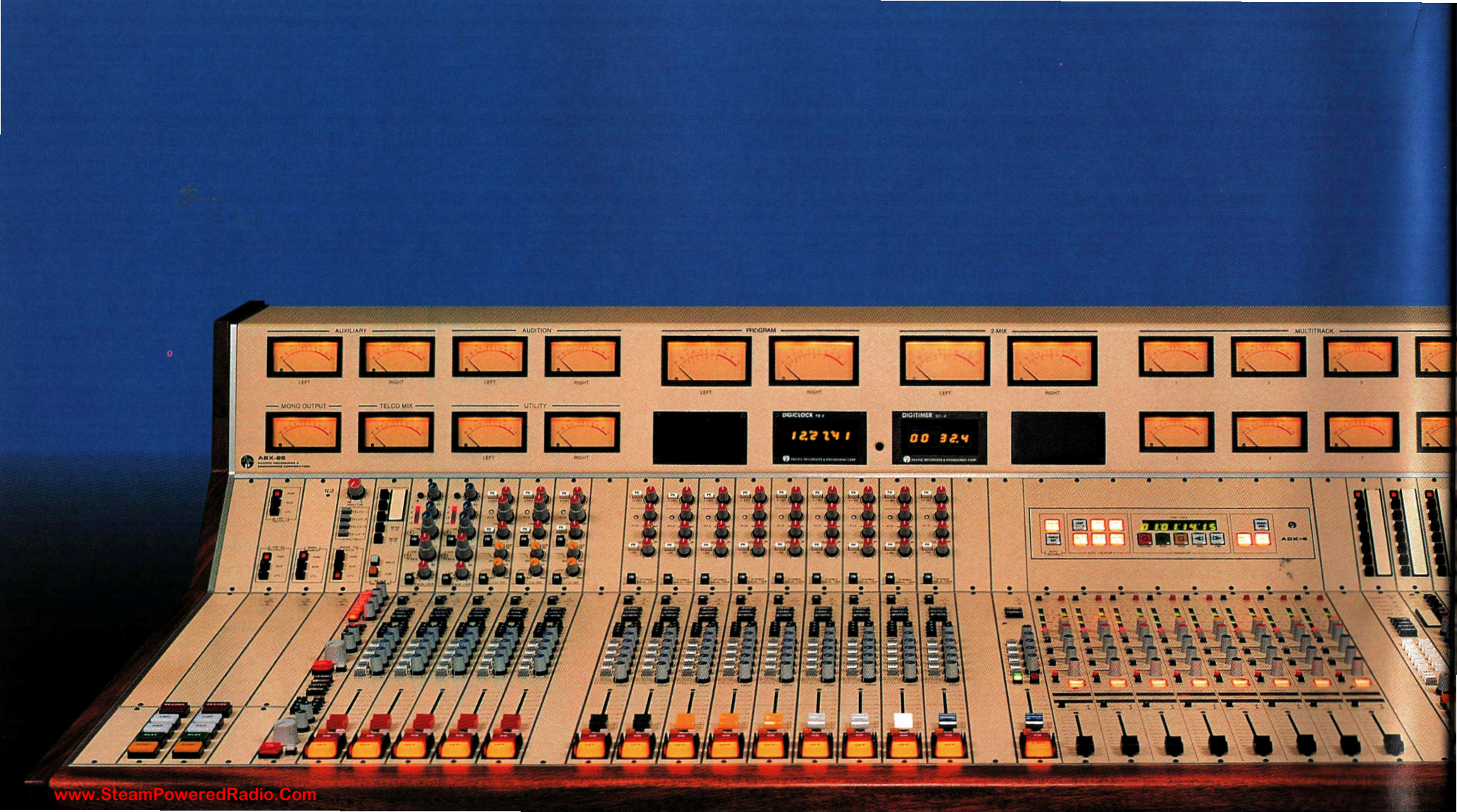


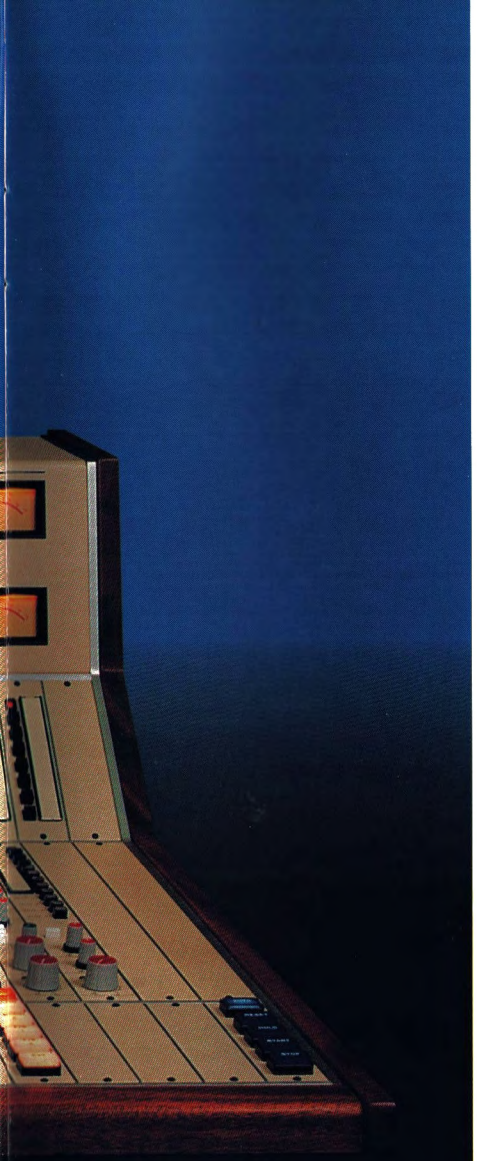
This module provides a selection of eight stereo signals switched to one output. Up to four remote line selector modules, with parallel inputs, may be installed in the console. The inputs and outputs for these modules are all available on the console's connector panel for ease of assignment. Typical applications include use as a remote line pre-selector for console input modules and as a source selector for recording equipment.

REMOTE CONTROL PANELS



Several machine remote control panels are available for convenient control of outboard source equipment. Some of the more popular standard panels include open reel, cassette, cart and DAT controls.





THE ABX CONSOLE - FULL FEATURES FOR MULTITRACK PRODUCTION

The powerful ABX adds impressive multitrack production capability to the on-air and stereo production facilities provided by the other X-Class consoles. As always, the standardized control layout lets operators move effortlessly from one activity to the other between consoles.

ABX FEATURES INCLUDE:

- ✓ Program Output, Audition Output, Utility Output, Effects Send & Return, Control Room Monitor, Slate/Talkback and Test Oscillator and Auxiliary Meter Switcher modules are standard features.
- ✓ Available in 26- and 34-input module capacity mainframes. The ABX accommodates any combination of mic and line input modules, analog or digital workstation multitrack modules, plus monaural and stereo equalizer and voice processing modules.
- ✓ Input mixing section is centered in the mainframe, providing easy reach to console controls and peripheral equipment.
- ✓ Microphone input modules have A and B inputs, high-performance Jensen Transformer preamplifier, phantom power, processing patch point, pan control, four effects sends, eight multitrack buses, stereo cue and solo.
- ✓ Stereo line input modules have A and B inputs, transformerless instrumentation preamplifiers, stereo processing patch points, input mode selector, four effects sends, pan/balance control, eight multitrack buses, stereo cue and solo.
- ✓ Independent CMOS remote control logic on each input of microphone and line modules.
- ✓ Low-noise, RFI immune, 12-volt CMOS control logic with short-circuit protected outputs.
- ✓ Three stereo program outputs — Program, Audition, and Utility — each with balanced, transformerless, distribution power amplifiers, plus the stereo Multitrack Two-Mix output with master fader.
- ✓ 30 dB of input, mix, interstage and patch point headroom.
- ✓ In-phase, balanced processing patch points on all input and output modules.
- ✓ Four telephone mix-minus feeds, plus telephone monitor mix.
- ✓ Monaural output, with balanced transformerless distribution power amplifier, selectable from any of the three program outputs.
- ✓ Four effect/foldback send mix buses, each with remote control logic.
- ✓ Two stereo effects/reverb mix returns with remote control logic.
- ✓ Control Monitor module with four external inputs, monitor mode selector, operator headphone Auto-Cue, and buffered outputs for host, co-host, and guest headphone feeds.
- ✓ Stereo cue and solo with automatic reference-level metering and headphone monitoring.
- ✓ Two independent Studio Monitor modules provide monitor, headphone, and talkback facilities for voice/announce booths and studios.
- ✓ Multi-way intercommunication system includes producer input and external feeds.
- ✓ Multi-frequency low-distortion test/reference oscillator.
- ✓ Voice slate system with identification slate tone.
- ✓ Up to seven machine remote control panels may be accommodated for control of tape, cassette and DAT decks.
- ✓ Heavy-duty construction includes quarter-inch thick, precision machined end plates for precise registration of the steel mainframe structure.
- ✓ Extra-rigid mainframe motherboard with heavy copper plating for low-impedance power, ground, and signal bus distribution.
- ✓ Extensive ground plane printed circuit shielding and RFI decoupling techniques.
- ✓ Superior quality components include Penny & Giles faders; full-spec Sifam VU meters; gold-plated connectors, relays and switches; and highly reliable Honeywell On and Off module command buttons.
- ✓ Heavy-duty power supply, with fully regulated audio, logic, and phantom power outputs.
- ✓ On-board audio supply re-regulation on each module.
- ✓ Easy-to-wire connector panel uses individual input, output and logic connectors with functions designated by connector type. Audio and logic interconnection system is compatible with BMX and AMX consoles.
- ✓ Connector kit, tool kit, spare parts kit and comprehensive technical manual included.

CLOCKS

Two digital clocks are available for the meter panel: crystal-controlled and time code slave. The slave display reads the commonly available ESE-type time code.

REAL VU METERS

Genuine Sifam R32 VU meters — not just "audio level indicators" equipped with VU scales. Meters bridge the main output lines to indicate the true level on each line — if an output is ever shorted, the operator will know it.

METER SWITCHER

Auxiliary meters are automatically switched to display the stereo level of Cue or Solo whenever either function is selected on any console module. Cue metering provides rapid confirmation of pre-fader levels, while Solo metering eliminates the need to use an output bus for preview or level setting. In addition to metering the two Send mixes, four external inputs are also selectable.

TELCO MIX

The telco mix section creates five unique mix feeds from up to four telephone callers and a user selection of the Program, Audition or Utility bus. While this function has taken on the term "mix-minus", implying the limited performance of subtractive nulling circuitry, this module actually constructs each mix from the component signals, resulting in very low crosstalk, full bandwidth output feeds.

MONAURAL OUTPUT

Module provides a selection of the three main stereo output buses, Program, Audition and Utility to derive a monaural output. A patch send and return is provided for the connection of external processing equipment. The output line amplifier is an active balanced design with two distribution outputs.

LINE OUTPUT SELECTOR

Selects a dedicated output of the Program, Audition and Utility buses for each of two separate stereo output lines for such applications as feeding main and back-up transmission lines or as an input selector for recorders.

STEREO OUTPUT / DISTRIBUTION AMPLIFIERS

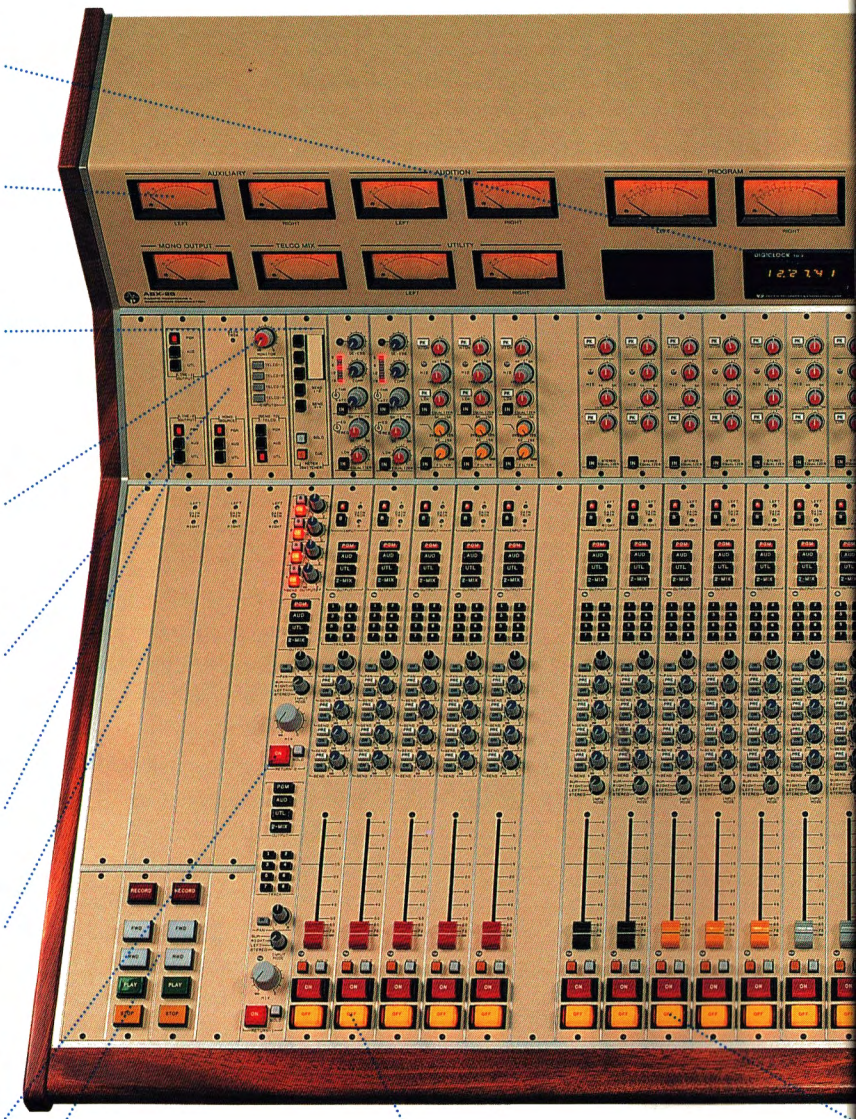
Three identical stereo output amplifier modules contain the stereo summing, patch send & return, and output distribution amplifiers for the Program, Audition and Utility buses. Each module supplies four stereo distribution outputs capable of delivering a sustained +28 dBm level into terminated loads.

SEND OUTPUT & RETURN MIX

Each of four send outputs is equipped with a master level control plus on/off and solo monitoring buttons. The on/off function may be remote controlled; a typical application would be an echo send button. The two stereo returns are equipped with a conductive plastic-fader, input mode selector, pan/balance control, on/off and solo buttons plus assignment buttons for the Program, Audition, Utility and 2-Mix buses. The first return may also be assigned to the eight multitrack buses. Logic circuitry is provided for the remote control of the return inputs.

REMOTE CONTROLS

Convenient control of the functions of outboard machines: DAT, open reel,cassette, mini-disc.



MICROPHONE INPUT

Featuring two inputs per module, Jensen preamp, phantom power, processing patch point, pan control stereo cue and solo monitor. Output may be assigned to stereo Program, Audition, Utility, 2-Mix, eight multitrack and four Send buses. Full-featured CMOS remote control logic follows input selection.

STEREO LINE INPUT

Two inputs per module, transformerless instrumentation preamplifiers, stereo processing patch points, input mode selector, balance & pan control, stereo cue and solo monitor. Assignable to stereo Program, Audition, Utility, 2-Mix, eight multitrack and four Send buses. Powerful CMOS logic for remote, timer and machine control follows input selection.

TIMER

Digital event timer is controlled by the timer control panel and displays time to one-tenth second resolution in the Stop and Hold modes.

INPUT PROCESSING

Voice processor, monaural and stereo equalizer modules are installed as required; immediately above their respective inputs.

REMOTE LINE SELECTORS

Provides for the choice of up to eight external stereo sources. Typical applications: selecting remote lines for stereo input modules, extending the input selection capability of the monitor system or as source selectors for outboard recording machines.

CONTROL ROOM MONITOR

Monitors Program, Audition, Utility, 2-Mix and any of four externally provided signals. Features include monitor mode selector, operator's headphone Auto-Cue, co-host and guest headphone feeds with programmable talkback. Monitor mute and dim are remote controllable.

STUDIO MONITORS

Provides monitor, talent headphone, guest headphone and talkback facilities for up to two studios. The selection of monitor sources include Program, Audition, Utility, 2-Mix, Sends 1-4 and up to four externally provided signals. Monitor and Talkback level controls are included along with a Talk Over Mute function.

SLATE / TALKBACK / TEST OSCILLATOR

The console's built-in electret microphone and/or a connected producer's talkback microphone can talk to any two studios, two foldback circuits plus a remote or external location, such as a screener booth, news room, two-way radio, etc. These positions may also direct slate commentary to recordings. The test oscillator generates 12 low-distortion tones for system testing and level alignment.

TIMER CONTROL

For manual or automatic control of the digital timer's Start, Stop, Reset and Hold (display freeze) functions. The Auto button allows the console to reset the timer for automatic up timing of selected input events.

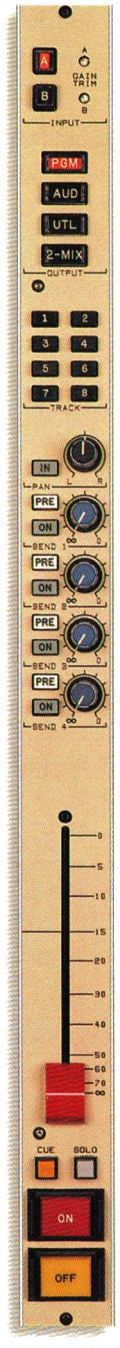
ADX MIXSTATION

The ADX Mixstation provides the audio I/O functionality of individual multitrack modules, while adding moving fader automation and auto-locater features for an ADX workstation. Every EQ, pan, send and assignment setting is saved with the mix along with any dynamic changes made to the fader levels. When the mix is played back, the Mixstation with its motorized faders recreates every subtle mix nuance of the original production.

2-MIX MODULE

Master stereo input to the console from either the ADX Mixstation or analog multitrack modules. Equipped the same as a stereo line input module, except that it's inputs are the Mixstation or multitrack modules plus any other input modules assigned to the 2-Mix buses. The output is assignable to the stereo Program, Audition and Utility buses. Control logic includes remote start and stop command pulses, audio ready and reset status.

MICROPHONE INPUT



The A/B input selector provides two microphone inputs per module. Each input has adjustable gain trim and programmable monitor mute selection for the control room or either of two studios.

The microphone preamplifier is adjustable over the nominal input level range of -60 to -35 dBu, accommodating a wide range of professional microphones. A preamplifier patch output, with balanced return, is available for connection to external processing and special effects equipment. Phantom power for condenser microphones is assignable to each input.

The module's output is assignable to the stereo Program, Audition, Utility, 2-Mix buses, and the eight Track buses: left channel to the odd-numbered buses, right channel to the even-numbered buses.

The Pan control, with insert switch, allows positioning of the microphone in the stereo image.

Each of the four effects/foldback Send mix controls has Pre-fader and On/Off switching.

The Penny & Giles 100 millimeter conductive-plastic audio fader has 15 dB in-hand attenuation at mix reference line.

The illuminated Cue button provides cue monitor pre-fader (PFL). The Solo button provides stereo monitor after fader and pan control (AFL).

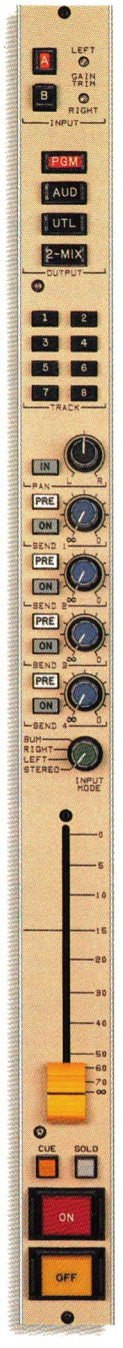
The Honeywell long-life industrial-grade On and Off buttons illuminate to indicate the status of the channel.

Extensive remote control logic for each input, A and B, includes:

- ON with tally
- OFF with tally
- COUGH (momentary mute)
- TALKBACK (to console, studio-1, studio-2 and/or external site)

Programmable control room and studio monitor muting incorporates a 40 msec delay before the mic channel is turned on, permitting "room monitor reverb" to decay off mic. For talent operation, the module's channel On button can be programmed to provide cough muting when held depressed.

LINE INPUT



The A/B input switches select either of two stereo inputs with independent control logic for each input. The stereo instrumentation input preamplifiers accommodate nominal input levels from -12 dBu to +8 dBu. The Instrumentation amps provide true input symmetry plus very high common-mode headroom capability — features not provided by simpler differential amplifier circuits. Preamplifier patch outputs and balanced returns provide a convenient connection point for external processing equipment.

The module's output is assignable to the Program, Audition, Utility, 2-Mix, and the eight Track buses: left channel to the odd-numbered buses, right channel to the even-numbered buses.

The Pan control with insert switch can balance a stereo signal or position a mono signal in the stereo image.

Each of the four effects/foldback Send mix controls has Pre-fader and On/Off switching.

The Input Mode switch allows source mode selection of stereo, left, right and a monaural sum of left and right.

The Penny & Giles 100 millimeter conductive-plastic stereo audio fader has 15 dB in-hand attenuation at the mix reference line.

The illuminated Cue button provides stereo cue pre-fader (PFL). The Solo button provides stereo monitor after fader and pan control.

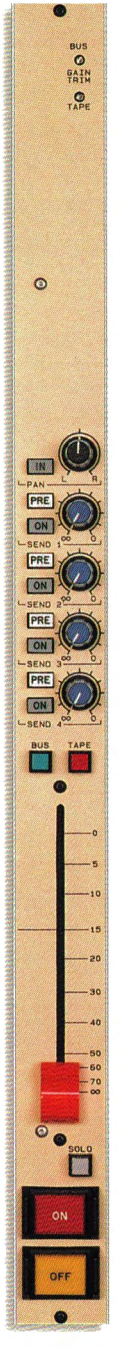
The Honeywell long-life industrial-grade On and Off buttons illuminate to indicate the status of the channel. The Off button can be programmed to be illuminated when the connected and selected source indicates it is ready for play.

Remote control logic for each input, A and B, includes:

- ON with tally
- OFF with tally
- CUE with tally
- SOLO with tally
- READY (source)
- AUDIO RESET (channel to Off)
- START pulse
- STOP pulse

Automatic Reset/Restart of the console event timer is also assignable for each input selection.

MULTITRACK



Each Multitrack module is a combination input and output module for one track of a multitrack recorder. The module provides line output to the track and stereo mixdown facilities for bus (record) or tape (playback) signals. The outputs of the multitrack modules are assigned directly to the console's stereo 2-Mix buses. These are summed in the 2-Mix module whose output is displayed on the stereo 2-Mix VU meters.

The Pan control, with insert switch, allows positioning of the bus/track signal in the stereo image.

Each of the four effects/foldback Send mix controls is equipped with Pre-fader and On/Off switching.

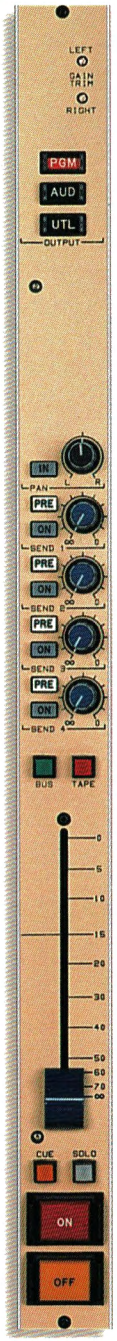
The Bus and Tape buttons select the source to be mixed by the module and displayed on the track VU meter.

The Penny & Giles 100 millimeter conductive-plastic audio fader has 15 dB in-hand attenuation at the mix reference line.

The illuminating Solo button provides stereo monitor after the mix fader and pan controls (AFL).

The Honeywell long-life industrial-grade On and Off buttons illuminate to indicate the status of the channel.

2-MIX



This is the stereo mix-down amplifier for the analog multitrack modules or ADX Mixstation. Viewed as the master stereo input module from these sources to the console, the 2-Mix module has the same features as a stereo line input module, but its inputs are the Multitrack or Mixstation modules, plus any other input modules assigned to the stereo 2-Mix bus.

The output of the 2-Mix module is assignable to the Program, Audition, and Utility buses.

The Pan control, with Insert switch, provides balancing of the stereo signal.

The four effects/foldback Send mix controls have Pre-fader and On/Off switching.

The master Bus and Tape buttons control the bus/tape mixdown selection status of all Multitrack modules.

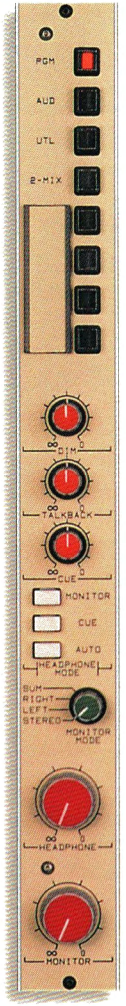
The Penny & Giles conductive-plastic stereo Master fader has 15 dB in-hand attenuation at the mix reference line.

The illuminated Cue button provides stereo cue pre-fader (PFL). The Solo button provides stereo monitor after fader and pan control (AFL).

The Honeywell long-life industrial-grade On and Off buttons illuminate to indicate the status of the channel.

Remote logic for tape machine or workstation control include start and stop command pulses, audio ready and reset status. Automatic reset of the console event timer may also be programmed.

CONTROL ROOM MONITOR



This module provides monitoring of Program, Audition, Utility, 2-Mix, and any of four externally provided signals.

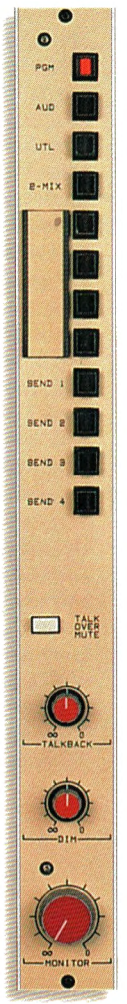
The Dim level control sets the automatic monitor speaker level reduction when using the console's talkback facilities. The Talkback level control sets the volume of incoming talkback communication to the console's cue system. The cue signal is automatically dimmed during talkback. The Cue level control adjusts the cue (PFL) feed to the cue monitor.

The Headphone Mode switch selects the source mode (Monitor, Cue or Automatic) to the console operator's headphone system. The automatic headphone switching system senses when any cue button on the console is engaged, and switches the console operator's headphone to one of two user-assignable modes, stereo cue or split cue, with summed cue to one channel and summed monitor to the other.

When any Solo button is engaged, the selected signal is automatically routed to the monitor speakers and the console operator's headphones, replacing the signal selected by the monitor selector. The Monitor Mode switch provides selection of stereo, left, right, and sum source monitoring modes.

Direct outputs for the co-host and guest headphones are *not* affected by the automatic cue or solo systems, nor by the monitor mode selection. Talkback to the console may also be inserted into the co-host/guest headphone outputs. Talkback to the console operator's headphone is always provided.

STUDIO MONITOR



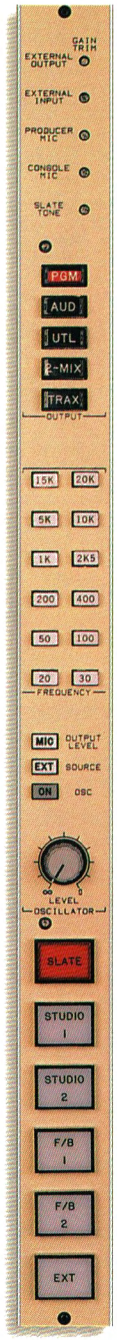
This module is designed for applications using a separate voice/announce booth or full studio. Two Studio Monitor modules may be installed in the ABX console. The selection of monitor sources include Program, Audition, Utility, 2-Mix, any of the four Send buses, and up to four externally provided signals.

The module provides five types of outputs to accommodate virtually all booth/studio monitoring styles:

- Variable level monitor output, adjusted by the front panel control, with talkback insertion and dimming control. Usually used with simple voice/announce booth monitoring systems.
- Fixed level monitor output with talkback insertion and fixed dim. Used to equip the booth or studio with its own monitor level control panel.
- Talent headphone output with talkback insertion and fixed dim. Used to feed the host and co-host headphone monitor systems.
- Guest headphone output without talkback. Used to feed the guest headphones.
- Talkback output. When the booth or studio is equipped with its own monitor selector and control system, provides the talkback audio to that system.

A Talk Over Mute button allows talkback to the booth or studio even when the loudspeakers are muted. This is useful when doing production voice work with talent who prefers not to wear headphones.

SLATE/TALKBACK/TEST OSCILLATOR



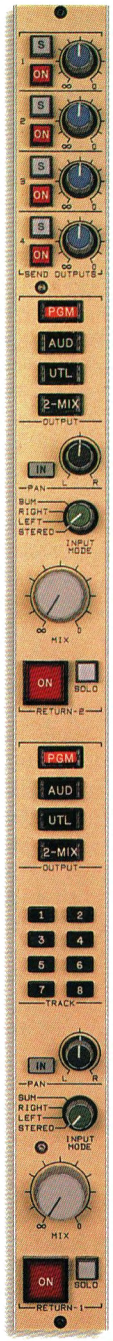
This module provides a test oscillator, voice/tone slating system, and talkback communications control for the console operator.

The test oscillator generates 12 low-distortion tones for system testing and level alignment. Oscillator output may be assigned to the Program, Audition, Utility, and 2-Mix buses, and all multitrack buses (Trax). It is also available for external applications on the console's connector panel. This external output is balanced and may be switched between line and microphone levels. An externally supplied test signal can be chosen in place of the internal oscillator by the Ext Source button switch. Typical applications include house reference tone, pink noise, and music tuning generators.

The console's built-in electret microphone can be used to add Slate commentary to a recording. A low-frequency, low-distortion slate identification tone (nominally 30 Hz, adjustable) can also be added for ease of slate identification.

The console's and producer's talkback microphones can communicate with two studios, two of the foldback circuits (IFB), and to an external site such as a call screener booth, two-way radio, announce booth, or news room. The frequency response of the talkback microphone preamplifiers has been carefully tailored to provide optimum speech communication.

SEND & RETURN

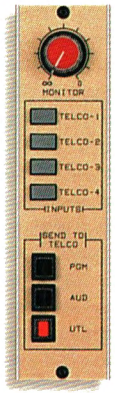


This module contains four effects/foldback Send mixing and output amplifiers, and two stereo reverb/effects Return input circuits.

The Send section has a set of bus summing and output amplifiers for each of the four effects/foldback send circuits. Each send output is equipped with a master level control plus On and Solo buttons. The send On/Off function can be remotely controlled; to offer such functions as providing voice talent with an echo send button.

The Return section contains two stereo effects inputs, each with On/Off, Solo, Input Mode, and Pan balance controls. Return 1 may be assigned to all four stereo mix and the eight multitrack buses. Return 2 is assignable to the four main stereo mix buses. Both Return inputs have remote On/Off control logic with tally light drive.

TELCO MIX



This module constructs five unique mixed outputs from the signals of up to four telephone callers and a selection of one of the output buses (Program, Audition, or Utility).

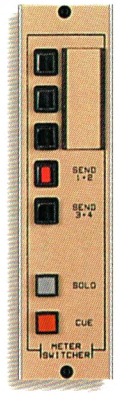
Telephone calls to be broadcast are controlled by the console input modules connected to each of the external telephone hybrid systems.

The Telco Mix module receives the audio from these modules and sums them into a Monitor Mix output. This is useful when talent or guests prefer to use a small speaker system instead of headphones to hear callers.

The Telco Mix module selects which output bus will be the base mix of inputs to be fed back to *all* callers. The module next creates a *unique* mix for each of up to four callers, combining the base mix plus *only* the *other* callers. This function is often termed "mix-minus", implying the limited performance of subtractive nulling circuitry. However, the Telco Mix module actually *constructs* each output from the individual component signals, resulting in very low-crosstalk full bandwidth output signals.

The Telco Mix module can also be used to create one or more custom mix-minus foldback mixes, such as for remote broadcasts.

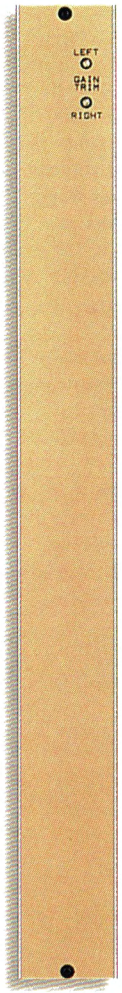
METER SWITCHER



This module drives the console's Auxiliary meters. You may select from three externally connected signals plus Sends 1 & 2, and Sends 3 & 4.

The Auxiliary meters are automatically switched to display reference level of Cue or Solo when either function is selected on any console module. Cue metering provides rapid confirmation of module pre-fader input levels. Solo metering completely eliminates the need to use a main output bus for preview and mix level setting. The Cue and Solo lamps illuminate to remind the operator when either function is engaged anywhere on the console.

STEREO OUTPUT AMPLIFIER

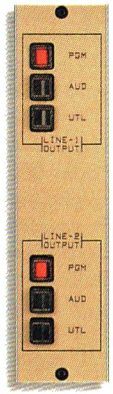


This module contains the stereo summing, patch send and return, and output distribution amplifiers for each console stereo bus output. The ABX has three of these modules, one each for the Program, Audition, and Utility buses.

Each module supplies four stereo distribution outputs and each of these outputs can deliver a sustained +28 dBm output level to a terminated load.

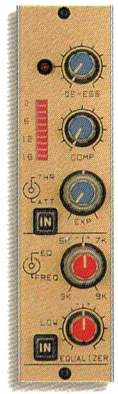
Patch send and return points are available for the connection of external processing equipment or patch field. The output distribution line amplifiers are active balanced push-pull designs intended for professional balanced termination techniques.

LINE OUTPUT SELECTOR



This module selects a dedicated distribution amplifier output of the Program, Audition, and Utility buses for each of two separate stereo output lines. Typically, these are main and backup transmission lines, or input lines for recording devices.

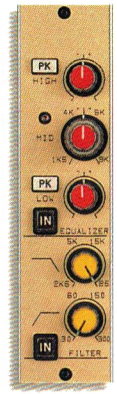
VOICE PROCESSOR



The Voice Processor combines four functions: equalizer, noise gate/expander, compressor, and de-esser. Each is specifically optimized to provide tonal and level control for voice information.

The processor has two major sections. The first is a switch-insertable equalizer which covers the frequency range normally required for speech correction and enhancement. The second section contains the expander (gate), compressor, and de-esser system. The expander threshold and attenuation controls achieve noise-reduction during pauses in speech. The compressor provides "smoothing and density" of the signal. The de-esser senses and operates only on the treble region, providing excellent control over excessive sibilance without undesirable broadband side effects.

MONAURAL EQUALIZER

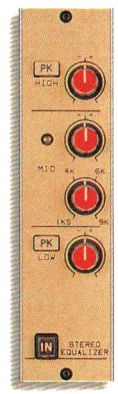


This unit combines a three-band equalizer and tunable high and low pass filters into one compact module. The equalizer section can be switched in and out independently from the filter section. The bass and treble equalization sections are independently switchable from peaking to shelving modes. An internal switch allows the bass equalization section to remain in the shelving mode during cut, providing maximum control over low frequency "rumble". The mid-range equalization is tunable over a considerable mid-band frequency range. All three equalization sections have reciprocal boost and cut curves. Third-order high and low pass filters have variable frequency controls covering a wide range.

MONAURAL OUTPUT

This module provides a selection of the three main stereo output buses — Program, Audition, and Utility — to derive a monaural output. A patch send and return enables the connection of external processing equipment or patch field. The output distribution amplifier is an active balanced design with two outputs.

STEREO EQUALIZER



This equalizer has two separate, but stereo coupled, three-band equalizers. The high and low frequency equalization is switchable between peaking or shelving mode. The mid-range equalizer has the same broad range of control provided in the monaural version.

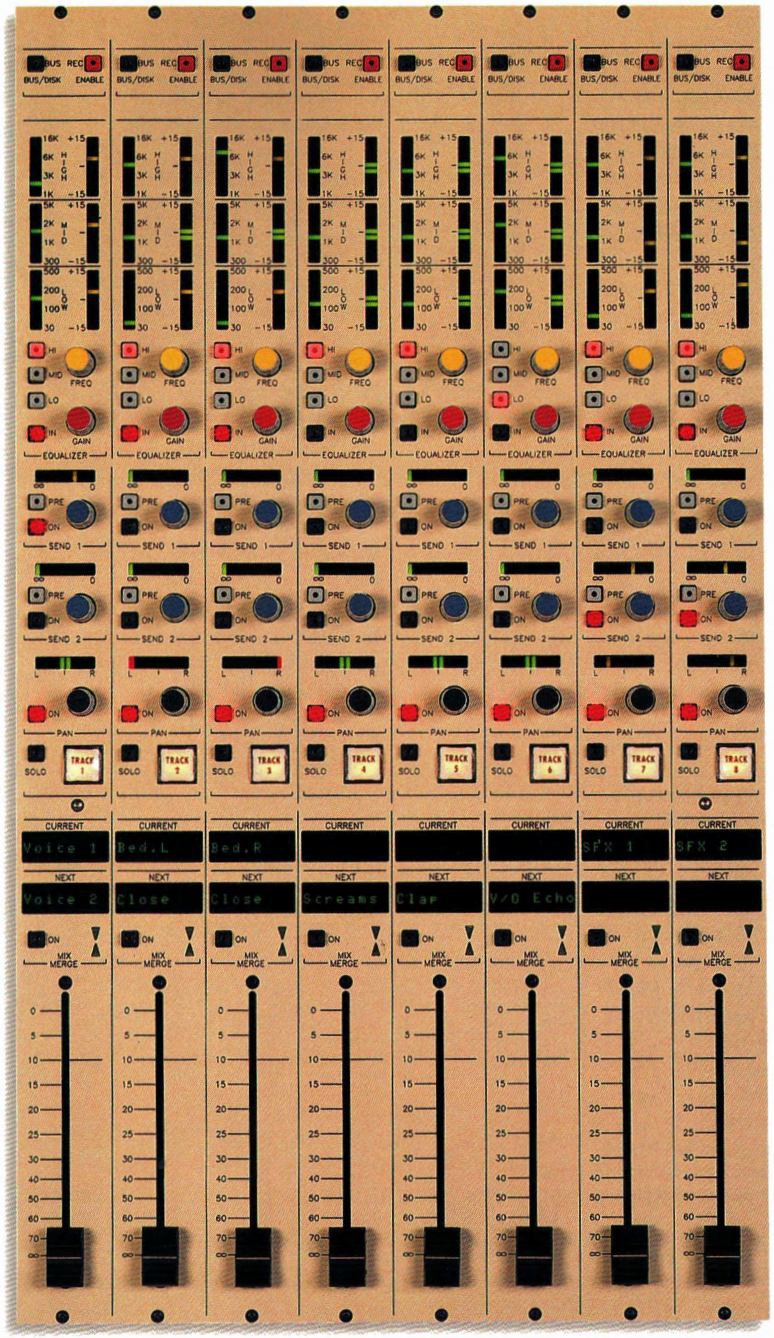
REMOTE LINE SELECTOR

This module provides a selection of eight stereo signals switched to one output. Up to four remote line selector modules, with parallel inputs, may be installed in the console. The inputs and outputs for these modules are all available on the console's connector panel for ease of assignment. Typical applications include use as a remote line pre-selector for console input modules and as a source selector for recording equipment.

REMOTE CONTROL PANELS

Several machine remote control panels are available for convenient control of outboard source equipment. Some of the more popular standard panels include open reel, cassette, cart and DAT controls.

ADX MIXSTATION



The ADX Mixstation provides the same audio I/O functionality as eight multitrack modules, while adding automation and auto-locater features for an ADX Workstation. In manual mode, the Mixstation may be connected to any multitrack tape or disk recorder and all of the track functions will operate normally. Connect the Mixstation to an ADX Workstation, and all of the functions are memorized with the production project. Every EQ, pan, send and assignment setting is saved with the mix along with any dynamic changes made to the fader levels. When the mix is played back, the Mixstation with its motorized faders recreates every subtle mix nuance of the original production.

The Bus/Disk buttons select the source to be mixed by the module and displayed on the track VU meter. Individual track record buttons are provided for use with an ADX Workstation.

Each track contains its own three-band quasi-parametric equalizer with variable frequency, variable gain and auto-Q. LED displays indicate the gain and frequency settings for each band.

Both of the two effects/foldback Send mix controls are equipped with Pre-fader and On/Off switching.

The Pan control, with insert switch, allows positioning of the bus/track signal in the stereo image.

Each track is equipped with individual On/Off and Solo switching.

When connected to an ADX Workstation, two alpha-numeric displays on each track show the current sound element as well as the forth-coming sound element.

Linear motorized faders remember even the most complicated dynamic mix changes while Mixmerge™ effortlessly takes you back to where you started.

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